

# MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

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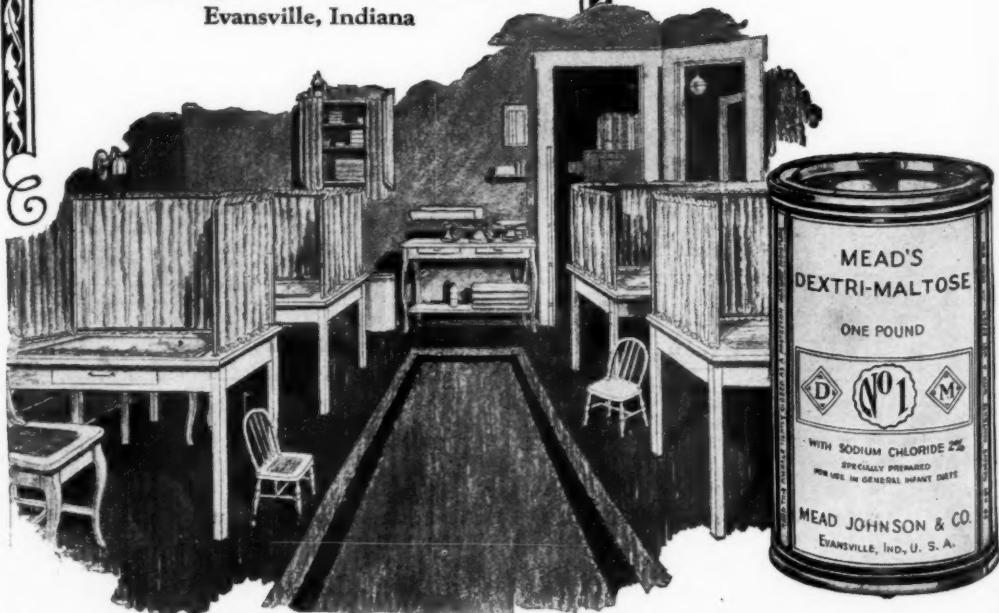
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VOL. XII

July, 1929

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## PNEUMO-SILICOSIS: WITH REPORT OF A FATAL CASE\*

RUDOLPH C. LOGEFEIL, M.D., M.S.  
*Minneapolis*

THE term pneumoconiosis is applied to changes developing in the lungs after inhalation of any dust in sufficient concentration and for a long enough time to be harmful. When silica is the harmful dust, the affection is called pneumo-silicosis, and it has been known to exist in many industries, especially hard rock mining, for hundreds of years. When complicated or associated with tuberculosis it is known as silico-tuberculosis and is essentially identical with tin or gold miner's phthisis, stone-cutter's phthisis, potter's rot, and grinder's disease. Dusts of lead, mercury or arsenic are actually poisonous, others produce bronchitis, while many, like silica dust, result in lung fibrosis.

The primary factor in the causation of this disease is the entrance of excessive quantities of fine particles of crystalloid silica (from quartz, sandstone or flint) by inhalation into the lymph channels of the lungs. It has been generally believed the real danger lies in the fact that these particles set up little or no irritation when their sharp, knife-like edges penetrate into the lung tissues, and by their insolubility they remain, little or no effort being made on the part of the lungs to expel them. However, this idea is probably not entirely true, as other sharp-edged dusts, such as carborundum, do not easily produce fibrosis. Myers<sup>1</sup> and Mavrogordato<sup>2</sup> found that silica is soluble in weak alkaline solutions similar to body fluids, and in water. Collis<sup>3</sup> has shown that soluble silica injected into the blood stream reacts with liver and kidney cells, causing fibrosis there.

Holdane<sup>4</sup> believes the particles of silica, being inert, fill the cells and slow their life processes by being in the way. Unlike coal dust, which

sets up an aseptic catarrh and resulting expulsion of the particles, dust of free silica remains within the "dust cells" (the latter form in large numbers in response to the inhalation of any dust) which die and become clumped together to form masses or pseudo-tubercles. In addition, an increased production of pigmentation takes place. This process occurs first under the pleura, but soon penetrates deeper into the lungs. The nodules become confluent, block the blood vessels and lymphatics, and so finally result in extensive fibrosis of the lung tissue, and corresponding decrease in air space.

Based on animal experimentation by Gardner,<sup>5</sup> no macroscopic lesions could be detected before the seventh month, but microscopic changes were noted after three weeks with beginning fibrosis at about two or three months. No definite statement can be made as to the degree of abundance of particles which is pre-requisite to the development of the disease.

In addition to its specific harmful effect on the lung tissues, pneumo-silicosis, for some unknown reason, greatly facilitates the multiplication of the tubercle bacillus, if this once gains entry to the lymph spaces.

All individuals exposed to silica dust do not develop silicosis, for in 1924 only 176 of 2,302 underground miners on the Rand for ten years or longer, developed it. Why the others did not get it might be explained by the fact that they inhaled less of the dust, or that they escaped the tuberculous infection which acts as an excitant of the disease. But it has been shown that no individual will escape the subsequent development of the disease if the exposure to silica dust is sufficiently intense over a continued period of time. However, it seems that certain ones have an inherent liability to the disease, and will de-

\*Read before the Minnesota Society of Internal Medicine, Rochester, Minnesota, Nov. 15, 1928.

velop a progressive condition when comparatively small numbers of silica particles have become imbedded in the lung tissue, even though further exposure to the dust may cease. This is called latent silicosis. Thus, there are two factors which are prerequisite to the development of silicosis: (1) the presence or access of a tuberculosis infection, and (2) the condition of latent silicosis. The latter is difficult to detect and gives no physical signs or symptoms.

There are two clinical forms of silicosis: (1) Simple silicosis, and (2) tuberculosis with silicosis. In the case of the latter, we may have tuberculo-silicosis or silico-tuberculosis, depending on which disease was primary. In races which are especially susceptible to tuberculosis, such as the Negro, tuberculo-silicosis is the predominant type. These cases are not as contagious as ordinary pulmonary tuberculosis. Also, the liability of simple silicosis in European miners to pass into tuberculo-silicosis increases with the age of the silicosis.

Simple silicosis may be divided into three stages. In the first stage, the symptoms are chiefly dyspnea on exertion, reduced chest expansion, increased susceptibility to "colds," and no impaired working capacity or increase in temperature or pulse rate. In the second stage, in addition to an increase in these symptoms, the patient usually shows loss of weight, slight cough and general cyanosis, an appearance of being sick, and decreased capacity for work. In the last stage, the dyspnea and cyanosis are very marked, the pulse rate increases, the cough is more annoying and may be associated with slight expectoration, chest expansion is slight if any, loss of weight more marked, and the heart may become dilated. Death is finally due to anoxemia, or terminal broncho-pneumonia, or both. Loss of appetite and strength, fever, night sweats, and hemoptysis, so common in tuberculosis, are not present in simple silicosis.

X-ray and vital capacity tests should aid in early diagnosis. The latter is reduced in direct proportion to the amount of involvement. The chief x-ray findings are, at first, enlarged hilum shadows extending out along the bronchi. Then these shadows become more dense and give a uniform mottled appearance, which finally becomes a diffuse, symmetrical, mottled fibrosis more marked in the lower lobes but filling practically the whole lung field (Fig. 1).

Prognosis is poor after the second stage is reached, as progression seems inevitable even when exposure is removed. Prevention is the most important thing. This is accomplished by frequent periodical examinations of workers exposed to silica dust inhalation, in order to detect

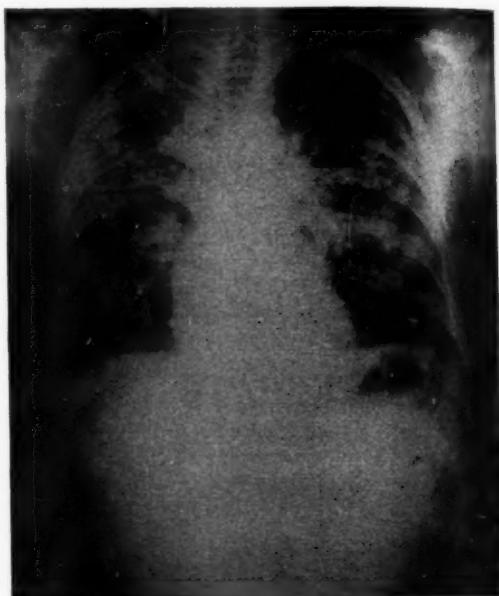


Fig. 1. Photograph of x-ray of lungs in case of pneumo-silicosis.

the disease early, eliminating those predisposed to or having pulmonary tuberculosis from this type of work, and improving environmental conditions of workers by better ventilation, the wearing of "gas" masks, etc. Research bureaus<sup>6</sup> for the study of the prevention and cure of pneumo-silicosis have been established in many mining districts, notably in South Africa.

The weight of dust and number of particles are the two important factors in determining extent and hazard of breathing silica dust in the air. Of the instruments to determine these factors, the Impinger and Kotze Konimeter are the best according to Sayers.<sup>7</sup> He gives the methods of prevention as follows: (1) Preventing dust from getting into air; (2) removal of dust from the air; (3) replacement of dusty air by clean air; (4) physical examination of workers to determine susceptible ones.

Coal dust is harmful in case of existing silicosis where lymphatic drainage is already blocked,

according to Cummins.<sup>8</sup> The principal occupations in this country where the condition of silicosis in workmen is commonly found, include certain types of mining where silica in its various forms is encountered, quarrying of certain kinds of stones, especially sandstone and granite, and work in industrial establishments where sand blasting or knife-grinding on native sandstone is done. The following case report is an example of the latter.

#### CASE REPORT

Mr. B. J. N., aged 45, lost his father at the age of sixty-six from apoplexy. His mother died at the age of sixty-nine from jaundice. Three brothers and three sisters are living and well. No history of tuberculosis in the family. He has been married for twenty-four years, and his wife is living and well. His wife gave birth to eight children, six of whom are living and well, two having died from drowning.

*Past History:* The patient has had measles, mumps, influenza, la grippe, and had a dry pleurisy in 1927, no operations, accidents, or injuries. He had been told that he has had a weak heart for several years.

*Social and Occupational History:* For the past eight years he has been working in a foundry doing polishing with the sand blower, which exposed him, constantly, during his work, to the inhalation of fine sand.

*Present Illness.*—The following portion of history was given by Dr. H. W. Reiter of Shakopee, who saw the patient in April, 1927.

"Dr. Reiter stated that at this time the patient had a cough with a slight fever, but that the fever was noticed only on the first occasion and that he had never had any fever since that time. His cough persisted during the summer of 1927. He continued at work during that summer but did not work after that. He worked in a room where there was a large amount of sand dust. The sand was used under high pressure. He had been at this kind of work for the six years of life preceding his final illness. He was seen by Dr. Reiter in October, again in December, 1927, and in February, 1928. Symptoms given by Dr. Reiter were: dry cough, usually nonproductive, no fever, shortness of breath becoming more marked as time went on. He was examined by two physicians in St. Paul, who were said to have made a tentative diagnosis of pulmonary tuberculosis."

The patient came to Thomas Hospital July 12, 1928, complaining of chronic cough, with only slight expectoration. His chief symptom was dyspnea on exertion, which had begun about a year previously but had been increasing in severity so that for the past six months it had been practically impossible for him to do any work. However, he did not stop working until June, 1928. He saw his local physician (who, I believe, was also the Company physician), and was advised to take a rest. He was also told that he had pulmonary

tuberculosis and it was because of this that he was sent to Thomas Hospital as a county patient. Aside from weakness and the marked dyspnea on the slightest exertion, he was feeling quite well after quitting his work. In the hospital it was noted that he had a slight morning cough with a small amount of sticky sputum. There was no hemoptysis, night sweats, or pain at any time. His highest weight was 147 and in June, 1928, his weight was 141. Had a good appetite, bowels regular, no urinary symptoms, and gave no history of exposure to tuberculosis or of having had a fever.

*Physical Examination.*—He was a well nourished male, lying comfortably in bed without noticeable dyspnea, with back rest up about three notches. Eyes, ears, nose, and throat were negative except for cyanosis (definite) of the mucous membrane. The thyroid was normal. Inspection of the chest showed very little expansion on inspiration. The movements of both diaphragms were very slight. Palpation showed an increase in tactile fremitus over both entire lungs, especially the lower half. Percussion showed dullness over both entire lungs, especially the lower two-thirds. Auscultation showed shallow distant breathing of a broncho-vesicular type, associated with fine râles, in abundance, all over both lungs, especially near the bases. These râles did not increase after cough. There was a distinct increase in the transmission of vocal tones, especially the spoken ones, over the entire lungs, especially in the back. The heart was normal in size, shape and position, and no murmurs were heard. Tones were somewhat distant. The second pulmonic tone was definitely accentuated. Blood pressure was 110 over 70. Abdominal examination was entirely negative, as was the remainder of the physical examination. X-rays had been taken by Dr. E. Norris of St. Paul three weeks previously, so none were taken at this time.

*Laboratory.*—Two urine examinations were normal. A blood examination showed a R.B.C. 4,600,000, H.G.B. 75 per cent, W.B.C. 10,500. Four sputum examinations were negative for the tubercle bacillus.

In view of the lack of fever, apparent massive involvement of both lungs, and repeated failures to find the tubercle germ in the sputum, tuberculosis of the lungs was ruled out. In view of the occupational history, marked dyspnea and cyanosis, and clinical findings, a diagnosis of pneumo-silicosis was made.

*Course.*—During his stay at the hospital his temperature ranged from 98 to 99 and the pulse from 72 to 100. On my visits to see him he complained of nothing but gradual increasing dyspnea which was more noticeable the beginning of the second week at the hospital. On July 22, he complained of some pain in the right leg but no tenderness or edema was noted. On July 23, about 9 o'clock in the morning there was a sudden marked increase in the dyspnea and cyanosis. He complained of more shortness of breath, which increased in severity during the course of the day. His temperature remained normal, but his pulse increased to 120. I saw him again in the afternoon and his condition was much worse. In the morning his lung find-

ings were much the same as before except somewhat exaggerated. In the afternoon, however, the breath sounds were more bronchial and almost tubular in character over both lungs, especially the right. The same râles were present but difficult to hear because of noisy breathing. There seemed to be an increase in dry râles at the bases, suggesting passive congestion. Cyanosis and dyspnea were greatly increased. His condition continued to grow worse during the afternoon. At 7:00 p. m. his temperature was still normal but pulse had climbed to 140. Dyspnea and cyanosis were marked at this time and it was evident he would die. He was expectorating a foamy, bloody sputum and his breathing was noisy and rapid. The lungs seemed almost solid, especially the right one, with bronchial to tubular breathing and many fine, dry, sticky râles all over both lungs. Pulse, dyspnea and cyanosis continued to increase and he died at 1:00 a. m.

Because of the sudden increase in the dyspnea and cyanosis and the cardio-vascular collapse following a recent complaint of pains in the right leg, I felt the sudden death was due to a complicating pulmonary embolism. The lung findings suggested pneumonia more than anything else, but he had no fever.

**Medication.**—The following medications were given: Adrenalin, morphine and atropine, coramine, nitroglycerine, alpha-lobelin and oxygen without noticeable effect.

**Postmortem.**—The postmortem was performed by Dr. E. T. Bell, Aug. 14, 1928.

"The body was disinterred for examination. The body is 172 cm. in length, estimated weight 150 pounds, well developed and fairly well nourished. The body has been embalmed. The subcutaneous adipose tissue is 1.5 cm. in thickness over the anterior abdominal wall. There are no external evidences of injury on the body.

The diaphragm is at the fifth interspace on the right, the sixth on the left. The left pleural cavity contains about 200 c.c. of blood-stained fluid, which may be partly from the embalmer's injection. The left lung is somewhat collapsed. There are numerous soft adhesions over the surface of the left lung mesially and posteriorly; there are no strong adhesions. The right pleural cavity contains no excess fluid. There are strong adhesions mesially, soft adhesions elsewhere. The pericardial sac contains no excess of fluid; its surfaces are smooth and clear. The heart is 10.5 cm. in width. The heart weighs 300 grams. There is no enlargement or dilation of any of the chambers. There is no disease of any of the valves or of the mural endocardium. The musculature shows no fibrosis or softening. There is no disease of the coronary arteries or of the root of the aorta.

The right lung weighs 1,050 grams. The entire lower lobe and the anterior half of the upper and middle lobes show marked consolidation. The lung is very firm on palpation but no nodules are palpable. Sections show on the cut surfaces very small islands of lung parenchyma separated by large masses of tissue with a dense fibrous texture and of dark color. The

lung is very tough on section and of fibrous character. No pus can be expressed but a little air is found in all parts of the lung. The central and anterior portions of the lung are not well preserved. Portions of the posterior part of the lung sink in water; other sections float deep in water. There are no areas of necrosis



Fig. 2. Photograph showing microscopic view of typical area in lung.

visible and the cut surfaces everywhere have a uniform appearance, showing a large amount of pigmented fibrous tissue and a very small amount of normal lung tissue. There are no cavities in the lung. The bronchial lymph nodes are deeply pigmented and moderately enlarged; they show no necrosis. There is no disease of the pulmonary artery. No changes are noted in the bronchi. The left lung weighs 850 grams, and resembles the right in all respects.

The omentum, intestine, appendix, spleen, liver, gall-bladder, pancreas, adrenals, stomach, duodenum and rectum show no evidence of gross disease. The left kidney weighs 120 grams, the right 110 grams. The capsules strip easily. The external surfaces are smooth. No gross changes are noted on the cut surfaces. There are no changes in the pelvis or ureters. No gross changes were noted in the bladder, prostate, aorta, lymph nodes of thorax and abdomen, thyroid gland, trachea or larynx. The bones in general, the skull and contents of cranial cavity show no evidence of gross pathology.

**Microscopic Examination** of the lungs shows enormous amounts of dense fibrous tissue filled with pigmented dust; only small islands of normal alveoli are present, scattered among the masses of dense fibrous tissue. Some of the alveoli contain serum and a few contain some pus cells. (See Fig. 2.)

#### **Diagnoses.—**

1. Advanced pulmonary silicosis.
2. Terminal acute pleuritis and pneumonia."

It was evident, after examining the lungs, why the patient was so dyspneic for there were few normally functioning alveoli remaining. In fact,

it surprised me that anyone could live so long with as little air space as he had. The next most striking thing was this great predominance of dense, fibrous tissue which caused the lungs to appear solid. The excessive pigmentation was characteristic also. The pus cells found in some of the alveoli may have been secondary to the infecting, terminal broncho-pneumonia.

#### CONCLUSION

Cases of pneumo-silicosis may occur in Minnesota in connection with certain foundry work and mining of granite. It is important to diagnose these cases early: first, to prevent exposure to tuberculosis, to which they are especially susceptible; and, second, to prevent extension of the disease to a point where it is incurable.

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#### AMNIOTIN-SQUIBB (OVARIAN HORMONE-SQUIBB)

The Council on Pharmacy and Chemistry publishes a preliminary report on Amniotin-Squibb and postponed acceptance to await acceptable evidence for the value of the product in ovarian hypofunction in women. The report refers to the preparation of extracts from the ovaries which on injection into spayed rats bring on changes in the vagina characteristic of estrus; that a few investigators have reported that they produce a similar effect in monkeys; and that extracts having similar actions on spayed rats have been prepared from other tissues such as the placenta, the amniotic fluid and even from the urine of pregnant animals, as well as nonpregnant females and normal males. The influence of these extracts on the symptoms of ovarian hypofunction in women has been neither striking nor consistent, but the stage has at least been reached where an extract having the definite effect on the spayed rat and the spayed monkey is sufficiently purified for experimental application. It is reported that the ovarian hormone-Squibb, prepared from the ovary, has been withdrawn from the market, and Squibb & Sons now present Amniotin, prepared from the fetal fluid of cattle. The preparation is to be administered subcutaneously. Amniotin is sufficiently purified and standardized to be used for careful experimental therapy in clear cases of ovarian hypofunction in women. (Jour. A. M. A., May 18, 1929, p. 1678.)

#### NATIONAL RADIUM EMANATOR AND SAUBERMANN RADIUM EMANATION ACTIVATOR OMITTED FROM N.R.R.

The National Radium Emanator, marketed by the National Radium Products Co., and the Saubermann Radium Emanation Activator, marketed by Radium Limited, are appliances for impregnating drinking water with radon (radium emanation) in dosages ranging from 50,000 to 200,000 mache units in the case of the former, and 10,000 to 100,000 mache units in the case of the latter. The acceptance of both these products expiring with the close of 1928, the firms were asked to submit evidence in favor of their continued inclusion in New and Non-official Remedies. The National Radium Products Co. submitted an advertising circular which was in effect an indirect advertisement to the public and which made claims far in excess of those previously permitted by the Council. Radium Limited failed to respond to requests for the current advertising. In consideration of the claims made for the first apparatus and of the failure of the second firm to submit the present advertising, and because no further acceptable evidence has become available, the Council on Pharmacy and Chemistry voted to omit these products from New and Non-official Remedies and not to accept further apparatus for the activation of drinking water until convincing evidence for the therapeutic value of the internal use of radon becomes available. (Jour. A. M. A., April 6, 1929, p. 1181.)

## THE CLINICAL SIGNIFICANCE OF EXTRASYSTOLES\*

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**C**ONSIDERATION of that most common of cardiac arrhythmias, the extrasystole, or, as it is more properly called, the premature contraction, leads one, in spite of the many facts known about it, to the recognition of a surprising confusion of opinion as to the clinical significance of this irregularity. Our attention has been recently called to this subject by the observation of a number of patients in whom foci of infection were provocative causes, and who were relieved by the eradication of such foci. Furthermore, investigation as herein reviewed reveals little consideration of this factor and its probable importance in this connection.

The fact that no other symptom referable to the cardiovascular system brings so many patients to the physician<sup>1</sup> emphasizes the importance of correctly analyzing this arrhythmia. This is especially true in the later age groups in which they more frequently occur. All extrasystoles are due to a hyperirritable state of the myocardium,<sup>2</sup> often local. The causes may be divided into extracardiac and intracardiac.<sup>3</sup> Emotional disturbances,<sup>4</sup> and pressure such as that produced by pregnancy, abdominal tumors and gastric flatulence, are the most common extracardiac causes. These are not serious and when recognized reassurance can be given of their harmless nature. Intracardiac causes may be classified as: (1) Degenerative, those seen in myocardial degeneration; (2) inflammatory, those associated with diseases involving the heart muscle in inflammatory processes, as rheumatic fever;<sup>5</sup> (3) toxemic, those associated with the endogenous myocardial effects of disease<sup>6</sup> as malaria and typhoid fever, and the exogenous toxins as tobacco, coffee,<sup>1</sup> and a variety of drugs,<sup>7, 8</sup> notably digitalis, strophanthus, aconite, barium chloride, potassium salts, alcohol, theophyllin and others, and (4) exhaustive,<sup>9</sup> due to a general physical state or a myocardial exhaustion secondary to valve defects or hypertensive heart disease, occurring with effort,<sup>3</sup> always indicative of myocardial disability, and warranting careful study. Cohn<sup>4</sup> says that they occur more in cardiac patients than noncardiacs,

and this if true should serve as an additional challenge to us that these groups be carefully differentiated.

It is not within the scope of this paper to discuss the mechanism of extrasystole production except in so far as its study in an individual case enables us to properly appreciate the underlying etiology through a better understanding of the method of production. Normally, cardiac contractions result from stimuli produced in the sinoauricular node, transmitted over the auricles, and by way of the auriculoventricular node through the Bundle of His and Purkinje fibers constituting the conduction system to the heart muscle. Under circumstances of hyperirritability<sup>2</sup> of any part of the myocardium stimuli arise there which pass over the heart and give rise to contractions unless the heart is in that part of the cycle in which it cannot respond, the refractory period. Since, as will be shown later, it is of real value to determine the point of origin of such stimuli, it behooves us to ascertain the location of the irritable focus, and we are eventually led to the recognition that the only accurate method of such determination is the electrocardiographic.<sup>10</sup> Clinically we know that auricular extrasystoles are less frequently forced upon the consciousness of the individual than the ventricular and are the cause of less complaint, but this is not invariable, and only the galvanometric method is infallible.

The extrasystole, besides being unrecognized by some patients, especially when of the auricular type, produces, more often in the ventricular type, a number of subjective sensations of which the patient complains.<sup>1, 11, 12, 13</sup> "Stops," "turns over," "drops a beat," "intermittent," "surging," "catch in breath," "gripping of throat," are terms called forth by these sensations, which may be associated with precordial distress, faintness or sweating. These are so often associated with other cardiac arrhythmias that the differential diagnosis is important. Without the electrocardiograph this is often impossible<sup>8</sup> and never certain, it being especially true in distinguishing certain cases of auricular fibrillation, sinus arrhythmia and heart block, conditions of different prognostic

\*Presented before the Ramsey County Medical Society, St. Paul, March 25, 1929.

significances. Usually the extrasystole is so isolated an arrhythmia that the diagnosis is not difficult, but when extrasystoles occur frequently the diagnosis must often be made by graphic means,<sup>10</sup> and this is very important because of radically different therapeutic procedures indicated in the more serious irregularities.

Of the three types, auricular, ventricular and nodal, the ventricular type occurs about six times as frequently as the auricular,<sup>12</sup> and studies have strongly indicated the greater seriousness of the latter. This is particularly true in studies on hospital patients, a well worked out series by Barker,<sup>14</sup> bringing out the fact that of a series of patients showing auricular extrasystoles as the only symptom referable to the cardiovascular system, 25 per cent died in the hospital as against a total medical mortality of 6 per cent. Of those showing other signs or symptoms of cardiac embarrassment than the premature contraction the mortality was 37.5 per cent as against a mortality of 17 per cent for all heart disease, those showing auricular extrasystoles having much the higher mortality. The nodal type<sup>8</sup> should be classed with the auricular as regards importance and is relatively infrequent in occurrence. Especially in mitral disease are auricular extrasystoles important to recognize because they are not infrequently the precursors<sup>2</sup> of more serious types of irregularity as paroxysmal tachycardia of various types or auricular fibrillation, and call for the institution of definite therapeutic measures.

D'Irsay,<sup>15</sup> in an interesting study, showed that in heart diseases with myocardial changes a majority of ventricular extrasystoles were from multiple foci of origin. Conversely this study also showed that diseases not involving the heart are not associated with multifocal extrasystoles, the presence of which always indicated a graver prognosis.

Crummer<sup>1</sup> believes that in mitral disease extrasystoles add nothing to the severity of the case, but in aortic lesions and chronic adhesive pericarditis they increase the gravity of the situation. However, Strickland-Goodall<sup>2</sup> has observed that the appearance of auricular extrasystoles in a previously normally rhythmic mitral stenosis has often been a sign of danger that paroxysmal tachycardia, auricular flutter or auricular fibrillation are about to set in. These are often due to auricular dilatation and relief of

right heart stasis by venesection may stop them. In pneumonia<sup>3</sup> the right ventricular extrasystole is indicative of a tendency to right heart failure, and in aortic disease the commonest arrhythmia is the left ventricular extrasystole due to myocardial fatigue presaging failure. McKenzie<sup>16</sup> says that "apart from the worry and fear it occasions, the extrasystole is of little significance," adding that he did not see the clear significance of them in acute febrile infections, although he had earlier<sup>5</sup> said that there is a great tendency to premature contractions where the myocardium is affected in rheumatic fever. The inconsistency of these statements is quite evident, it being difficult to understand the later ignoring of earlier observations which are amply verified by the clinical experiences of others.

However, focal infection is little alluded to in such discussions and I therefore present the following case history résumés:

*Case 1.*—C. D., a physician aged 61, has angina pectoris and coronary sclerosis with hypertension, carrying a markedly enlarged heart and T-wave inversion in all leads in the electrocardiogram. A severe and distressing extrasystolic arrhythmia developed with the onset of an acute follicular pharyngitis. This irregularity was gradually relieved with treatment of the local condition and has not returned.

*Case 2.*—O. L., aged 47, a watchmaker, complained of being easily fatigued and of a skipping of every third or fourth heart beat associated with considerable distress, and periods of two or three days at weekly intervals of diarrhea (two to three loose stools daily). While bacteriologic studies of the stools were not made, the diarrhea was completely relieved by the use of stovarsol .25 gm. three times daily, and at the same time the extrasystoles were markedly diminished. This medication has had to be repeated at intervals during the past eight months, the irregularity increasing in frequency with the return of the diarrhea.

*Case 3.*—B. L., aged 46, a housewife, complained of precordial oppression, occurring chiefly at night, and found to be associated with missed beats of which she was not conscious. Physical examination revealed the presence of several abscessed teeth, the removal of which was followed by complete relief which has persisted since this was done in October, 1927.

*Case 4.*—P. K., aged 30, a grain dealer, complained of fatigue, palpitation and faintness at times. He was found to have frequent extrasystoles, often following each beat. Examination revealed septic tonsils, the removal of which was followed by a relief of symptoms, including the irregularity.

*Case 5.*—J. C. W., aged 60, a clergyman, on feeling flushed on arising one morning, felt of his pulse and

noted an irregularity. This was detected six weeks before he was examined and he had found it present at intervals every day since. Examination revealed a dextrocardia and diseased tonsils in spite of a negative throat history. Removal of the tonsils was followed by an immediate and permanent relief of the arrhythmia.

*Case 6.*—L. H., aged 19, a student nurse, complained of attacks of rapid heart action, irregularity and associated fatigue. The arrhythmia was extrasystolic in nature and partial relief had been obtained by the use of quinidin sulphate. General examination revealed the presence of a number of abscessed teeth, the removal of which afforded the patient complete relief of her symptoms.

These cases, while forming but a small group, are sufficiently striking to warrant consideration that the arrhythmias may be due to a variety of such focal infections and are all probably toxic in nature. They correspond quite well with the observations of Smith,<sup>17</sup> who, in a study of extrasystoles in thirty-one patients with infections and toxemias outside the heart, found twelve restored to normal by the removal of these influences. Such toxemias by these manifestations show a definite heart muscle effect and whenever occurring should call for a thorough search for foci, realizing that neglect of this may induce a chronic myocardial toxemia later to be demonstrated by the more widely accepted picture of heart muscle disease. They comprise a group to which attention has long been called by Greene,<sup>18</sup> more recently having received wide recognition, especially by Christian.<sup>19</sup> It is felt that the early discovery and eradication of such foci will prove a valuable factor in reducing cardiac morbidity in that group of older heart patients in which age class there has been a progressive increase in mortality from heart disease.

The indicated method of handling these cases is rather well agreed upon.<sup>1, 2, 7, 12</sup> Realizing that the arrhythmia is not in itself serious we nevertheless often find that it leads to the recognition of other evidences of heart damage which must be sought and treated. As a corollary to this, the diagnosis of an extrasystolic arrhythmia carries with it the obligation to satisfactorily explain its presence, the burden of proof resting upon the individual who characterizes it as of little significance. This is especially true when it is recognized that its occurrence in heart disease bears no relation to the amount of damage the heart may have sustained. Smith<sup>12</sup> says that even if

isolated and rare it is better to watch the patient over a period of time to be sure of their harmlessness. If following an infection or if multiple or rapidly recurring in type, they are to be regarded as a sign of damage to the heart and a thorough examination is indicated. Thus is seen the necessity of regarding every patient with extrasystoles as a suspect heart case, the advisability of a complete investigation on the part of the physician being emphasized for a thorough understanding of the condition.

Cohn<sup>4</sup> expresses the majority opinion of writers on the subject when he says that the significance of this arrhythmia must be interpreted in the light of the whole clinical picture under consideration.<sup>11</sup> Its occurrence without other evidences of cardiac abnormality should lead to the conclusion of its harmless nature and the patient reassured accordingly, usually without the necessity of treatment. In the group of cases in which the arrhythmia is accounted for on the basis of organic cardiac disease, the treatment directed to the underlying condition will often relieve the extrasystoles, although in cases in which they remain troublesome, even where no organic heart disease can be found, considerable relief and often eradication of the irregularity can be obtained by the use of drugs of quinine derivation, notably quinidine sulphate.

#### SUMMARY

1. Attention is called to a surprising degree of confusion existing as to the clinical significance of extrasystoles.
2. An etiologic classification of this arrhythmia is given, stressing the importance of its correct analysis in an individual case.
3. A brief review of the mechanism of extrasystolic production is given with an explanation of the clinical significance of analyzing the origin of premature contraction in a patient.
4. The importance of the electrocardiogram in this work is stressed.
5. The clinical significance of the several types of extrasystoles in various conditions is discussed.
6. The problem of focal infection in the production of this arrhythmia is discussed and illustrated by case reports.
7. The clinical significance of extrasystoles is shown to be reflected in the consensus of opinion of authorities who agree that all patients present-

ing this arrhythmia deserve a careful examination from the cardiac standpoint, realizing that it frequently points the way to the diagnosis of an otherwise obscure heart condition, the recognition of which is of great importance in our present-day efforts to reduce the morbidity and mortality from that group of diseases which heads the list of the causes of death.

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#### ACCIDENTS WITH LOCAL ANESTHETICS

The investigation of accidents following the use of local anesthetics instituted by the Therapeutic Research Committee of the Council on Pharmacy and Chemistry of the American Medical Association has had many practical results. The reports were published in 1920 and 1924; now, André Klotz of the Strasbourg Hospital has published the results of an extensive study of the literature on this subject. He agrees with the American committees that accidents are due mainly to over dosage, to injections of cocaine, to the use of solutions of too high concentration, to excessive doses of epinephrine, and a smaller number to peculiar conditions of the patient that are beyond evaluation by the physician. The investigations of the American committees and of Klotz have thrown much light on the causes of avoidable accidents with local anesthetics, but it is obvious that many surgeons continue to disregard the warnings that have been published. The report of Klotz emphasizes the importance that physicians should continue to coöperate with the Permanent Committee for the Study of Toxic Effects of Local Anesthetics of the Therapeutic Research Committee. (Jour. A. M. A., May 18, 1929, p. 1680.)

#### PRESCRIPTION OF REMEDIES IN ACCORDANCE WITH ETHICS

The Principles of Medical Ethics of the American Medical Association contains the following with regard to the prescribing of medicines: ". . . it is . . . unethical to prescribe or dispense secret medicines or other secret remedial agents, or manufacture or promote their use in any way." It contains no provisions holding it unethical to prescribe proprietary medicinal preparations of declared known composition. If physicians will limit their prescribing to the medicinal products included in the United States Pharmacopeia, the National Formulary, and New and Non-official Remedies, they may be confident that they are not prescribing secret remedies; they should be mindful, however, that the National Formulary contains many drugs and drug mixtures that are practically worthless, and that preparations in New and Non-official Remedies are new, and, though worthy of trial, are in some instances still more or less in the experimental stage. For a guide to prescribing, the Epitome of the U. S. Pharmacopeia and National Formulary, and New and Non-official Remedies are to be recommended. (Jour. A. M. A., May 18, 1929, p. 1697.)

## IODODERMA AND BROMODERMA\*

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**I**ODIDES and bromides are so widely used, both in combination and individually, that an eruption resulting from them is common. Every physician is familiar with iodide or bromide acne. But occasionally eruptions of a bizarre character and unusual distribution are observed. These have all been described but are seemingly so uncommon in the general clinician's experience that they are seldom recognized. Misinterpretation of these lesions often leads to much unnecessary annoyance and even suffering.

### REPORT OF CASES

**Case 1.**—A woman aged twenty-three years was seen in June, 1918. She had taken bromides periodically for epilepsy which had begun at the age of seventeen years. There was much punctate scarring over the seborrheic areas and over the extremities, probably resulting in part from former acne and in part from involuted bromide pustules. On the lower parts of the legs were large plaques and many small, discrete pustules (Fig. 1). The plaques had elevated borders which exuded pus freely and were in part distinctly verrucous. The zone within the border consisted of a thick, dirty-brown adherent crust, and in the center was a superficial scar. Under local antiseptic dressings and an application or two of roentgen ray, involution of the lesions took place in about a month.

**Case 2.**—A woman aged twenty years was seen in May, 1919. She did not give a definite history of having taken bromides, but she had taken various "medicines" for about six months. There were grouped pustules along the border of the hair on the forehead (Fig. 2), but lesions were not present on the face. There were livid macules and a few pustules on the extremities. The urine contained bromides. Involution of the lesions promptly took place when the medicines were discontinued.

**Case 3.**—A man aged forty-four years was seen in January, 1921. He had taken a patent medicine as a "blood purifier" for about two weeks. Fungating lesions were present on the cheeks and neck (Fig. 3), nodular in type, with much edema and covered with yellowish vesicles. There was oozing and crusting of some of the lesions and there was superficial ulceration of some of the lesions on the neck. Iodides or bromides could not be demonstrated in the urine, but there was a positive reaction to the intradermal iodine test. Involution of the lesions took place in a week under mild antiseptic dressings, catharsis, and an abundance of fluids.

**Case 4.**—A man aged thirty-five years was seen in February, 1921. For about three weeks he had been given potassium iodide for possible syphilis with hypertension. An eruption closely resembling pompholyx had appeared on the hands and fingers (Fig. 4). Hy-



Fig. 1. Typical patch of fungating bromoderma with discrete pustules.

perhidrosis was not associated, and the lesions promptly subsided when the iodides were stopped. The patient had had similar eruptions on other occasions when he had taken iodides.

**Case 5.**—A woman aged fifty-five years had been taking a patent preparation known to contain bromides every night for two years. A year and a half before she was seen at the clinic, a small lesion had developed on the right leg. This gradually had spread, new lesions developing simultaneously. The lesions had begun as small pustules. She presented a crusted lesion, with a verrucous border, and in part a cribriform superficial ulceration. There was rapid improvement when the bromides were discontinued but the subsequent course is not known. Bromides were demonstrated to be present in the scales and crusts of the lesions.

\*From the Section on Dermatology and Syphilology, The Mayo Clinic, Rochester, Minn. Submitted for publication April 15, 1929.



Fig. 2. Grouped pustules on forehead.

Fig. 3. Fungating lesions with yellowish vesicles on cheeks and neck.



Fig. 4. An eruption resembling pompholyx following the administration of iodides.

Fig. 5. The distribution and configuration may be noted.

*Case 6.*—A woman aged thirty-two years was seen in November, 1924. She had taken a preparation containing iodides for asthma, in July, 1922, following which the first attack had occurred, only to subside rapidly when the iodides had been discontinued. A second at-

tack had occurred in October, 1923, following the use of iodides, and this also had subsided rapidly on their discontinuance. In the course of a third attack the patient was seen at the clinic, but a history of the use of iodides could not be obtained. The eruption

consisted of yellowish vesicles with a marked inflammatory base; some of them had an annular configuration. They were distributed over the face, on the neck anteriorly and posteriorly, over the upper portion of the back, and on the posterior aspects of the forearms,

charge was of a sero-sanguineous character and apparently not that produced by pustular lesions. More than one examiner believed the process to be a nodulo-ulcerative syphilitic, especially since the lesions had an arciform border in addition to the other characteristics



Fig. 6. Lesions which resembled nodulo-ulcerative syphilide

Fig. 7. Lesion resembling nodulo-ulcerative syphilide.

hands, and fingers. There was marked superficial scarring, especially on the face, probably resulting from former attacks (Fig. 5). Following administration of small doses of iodides, to test out the patient's sensitiveness, new vesicular lesions appeared promptly, accompanied by burning and stinging sensations similar to those which had preceded the appearance of lesions in previous attacks. One specimen of urine examined did not contain iodides. Following the discontinuance of the iodides the lesions rapidly improved.

*Case 7.*—A woman aged sixty-six years had been taking various medicines, none of them definitely known to contain bromides or iodides. The lesions had appeared about two years before she was seen at the clinic; old lesions had been undergoing involution while the new lesions had been appearing. The appearance of the lesions was extraordinary, as it seemed that the process was entirely a superficial ulceration and nowhere was there any evidence of pustulation. The dis-

(Figs. 6 and 7). Examination of the urine for iodides and bromides gave negative results. Bromides were given as a therapeutic test, but a reaction did not occur. A small dose of iodides was given at 12 o'clock noon. Three hours later the patient began to complain of pains identical with those she had noticed in the past, before the appearance of an eruption. Many pustules appeared over a period of about two hours, but apparent reaction in the old lesions was not observed. Other new lesions continued to appear within the next twelve hours. After discontinuance of all iodides, the lesions began to involute rather rapidly.

*Case 8.*—A man aged forty-nine years had been four months before he was seen in January, 1928, taking bromides for epilepsy for eighteen years. About "boils" had developed. Some of these had become crusted and had discharged pus. The lesions were quite characteristic for bromoderma and healed rapidly when the bromides were discontinued. The most interesting

feature about the case was the appearance of bromoderma eighteen years after the more or less regular use of bromides was begun.

*Case 9.*—A woman aged sixty years had been taking a mixture containing bromides for nervousness for about a year when the first lesion had appeared on her leg. This lesion had persisted and it spread. The lesion was quite typical for bromoderma, but because of its somewhat unusual behavior biopsy was carried out, in May, 1927. The most interesting feature about this case was the cellular change suggesting a low grade of malignancy (Fig. 8). On discontinuance of the bromides the lesion healed, although somewhat slowly.

*Case 10.*—A woman aged thirty-two years was first seen in August, 1927. She had been taking medicine for nervousness for about six weeks. Two weeks before she had come to the clinic, the eruption had appeared and had persisted even on discontinuance of the medicine (Fig. 9). The lesions underwent involution very slowly when she was on a regimen consisting of a high intake of sodium chloride and intravenous administration of solution of sodium chloride. A few active lesions still were present three months after the patient was first seen. The urine was repeatedly positive for bromides.

*Case 11.*—A woman aged thirty-two years was first



Fig. 8. Proliferation of epidermal epithelium suggesting epithelioma.



Fig. 9. A classical fungating bromoderma. The verrucous border, cribriform center and discrete satellite pustules are shown.

Fig. 10. Extensive fungating bromoderma.

Fig. 11. Same case as that shown in Figure 10.

seen in November, 1927. She had been taking hyoscine hydrobromide for four years for the residuum of encephalitis and had been taking a patent preparation

containing bromides for about a year. The eruption had begun to appear about a year before she came to the clinic. It had rather a classical appearance and was

extensive (Figs. 10 and 11). The urine contained bromides. Improvement was rapid on discontinuance of bromides and the administration of solution of sodium chloride intravenously.

*Case 12.*—A woman aged thirty-eight years was first seen in November, 1928. She had been taking various medicines for years. Verrucous lesions were present



Fig. 12. Erythema nodosum type of bromoderma or iododerma.

on the arms and legs which were typical for either iododerma or bromoderma. The striking feature, however, was the nodose lesions on the legs and arms (Fig. 12). The urine contained both iodides and bromides. When all medicines were stopped the nodose lesions underwent involution in about a week; the other lesions persisted longer. It is probable that the nodose lesions, although they resembled erythema nodosum very closely, were the result of ingestion of drugs. Whether the disorder was due to iodides or to bromides could not be determined in this case.

#### COMMENT

*Clinical data.*—The photographs and the descriptions of cases demonstrate that various types of iododerma and bromoderma vary much in the gross. Yet there are characteristics that distinguish them from other lesions, even if these are not always readily detected. It is a striking fact that these two representatives of the halogen group can produce lesions on the skin that are identical in all respects so that it is not possible

to differentiate them by their appearance. These somewhat bizarre lesions have been referred to as verrucous, vegetating, tuberose, and nodose iododerma and bromoderma. The elementary lesion is usually a pustule and the unusual lesions are the result of aggregated pustules with secondary changes, except in the true nodose type, which presents nodules similar to those seen in erythema nodosum. It is usually possible to find at least a part of the lesions showing a warty appearance; the remainder is a crust of inspissated serum and pus and some secondary scarring. The cutaneous lesions for which these drug eruptions are most easily mistaken are tuberculosis verrucosa cutis, blastomycosis, dermatitis vegetans, pemphigus vegetans, syphilis, and occasionally carcinoma. The verrucous element is common to all these lesions, but when in addition a discrete pustule is found close to the larger lesion the evidence points strongly to a drug as the cause. The distribution of the lesions is not characteristic, but they have a tendency to predominate on the legs. Especially is this true of bromoderma. This is evident in the cases reported here.

The final diagnosis, however, usually will have to be made by collateral evidence. Once the suspicion is aroused of a possible drug eruption, all medication should be stopped. New lesions may appear, however, for several days and the older lesions may not show tangible change for weeks after the offending drug has been stopped. Bromides or iodides found in the urine may be considered significant, but these drugs may have been administered without actually being the cause of the eruption. The absence of these chemicals in the urine is not evidence that a drug is not the cause of the eruption. Demonstration of these chemicals in the scales and crusts of the lesions can be accomplished only with great difficulty, as the amounts of them must be infinitesimal in the material obtained. It was possible to demonstrate the drugs chemically in case 5 of the series reported here. If the diagnosis cannot be clinched otherwise, it may be necessary to give one or both of the chemicals as a therapeutic test. A small dose will produce an exacerbation in and congestion of the lesions; often this is associated with the appearance of new lesions and with sensations of pain and heat in the lesions, or at the site of new lesions.

It seems to be a fact that the drugs must be taken over a long period of time, usually a period

These eruptions are usually secondary to as well as iododerma. They appear suddenly and at first are papular and vesiculated. The eruptions may become confluent, forming large, irregular, yellowish, crusty areas. The patient may complain of pain or tenderness over the affected area. The lesions may become secondarily infected, causing a foul odor.

Antipyrin and arsenic, among other drugs, have been recommended as antidotes, but apparently they have never gained much popularity. It may be seen why it would not be wise to administer these drugs over a long period merely as an antidote. I have given arsenic a trial in selected cases, but did not find it particularly efficient as a preventive. Apparently a patient who has once passed through an attack of bromoderma or iododerma occasionally is subsequently immune. It has been claimed that patients can sometimes be desensitized by gradually increasing doses.

The treatment of these eruptions resolves itself primarily into proper recognition of their etiology and removal of the offending agent. The lesions are occasionally found to be so troublesome that considerable nursing and medical attention is necessary. In the severe form, rest in bed, cathartics and increased administration of fluids are desirable. Local, mildly antiseptic wet dressings, such as potassium permanganate and boric acid, seem desirable. When the fungating lesions

have begun to dry, gentle removal of the crusts and other debris by curettage seems to enhance involution. Occasionally the lesions are so painful that an anodyne becomes necessary. For the pain I have also found one or two treatments with unfiltered roentgen rays, a fourth to a half of a skin unit dose, desirable. This, at the same time, seems to have a definite drying effect on the lesions. Wile\* has recommended intravenous injection of sodium chloride.

*Histopathology.*—There is nothing characteristic about the microscopic picture. There is usually a tremendous infiltrate consisting of polymorphonuclear leukocytes. Often small abscesses are formed within this infiltrate or its surrounding tissue. The vessels are dilated and filled with leukocytes. One of the interesting and important features of the type of case under discussion is the extraordinary proliferation of the epidermal epithelium; often this is present to such a degree, and has such an atypical character, that malignancy is suspected (Fig. 8). The rete pegs sprout in all directions into the cutis, sometimes actually isolating parts of the cutis. The epithelial proliferation, however, extends but little beyond the infiltrated area.

\*Wile, U. J.: Further contributions to the experimental aspects of iodid and bromid exanthems. *Arch. Dermatol. and Syphilol.*, 1923, viii, 407-410.

#### OVOFERRIN OMITTED FROM N. N. R.

Ovoferdin is a solution containing 5 per cent of an artificial protein product in which iron is present in the so-called organic, or masked, form. This product was accepted for New and Non-official Remedies in 1905. From the time of its acceptance, members of the Council have questioned its value, mainly on the ground that it presents no demonstrated superiority to the standard U. S. P. iron preparations. Ovoferdin is a survival of the now obsolete theory that iron in non-ionized form should be more efficient therapeutically than the ordinary iron preparations. The Council on Pharmacy and Chemistry voted to omit Ovoferdin from New and Non-official Remedies because it is an unscientific and superfluous mixture. (Jour. A. M. A., May 4, 1929, p. 1521.)

#### VIKING PALATABLE COD LIVER OIL OMITTED FROM N. N. R.

Viking Palatable Cod Liver Oil, marketed by the Viking Health Products Co., is cod liver oil containing 0.2 per cent of benzaldehyde. It was accepted for inclusion in New and Non-official Remedies in 1927. In 1928 an advertisement for the product appeared in the Chicago Daily News which was objectionable in that it made unwarranted claims for the product. The rules of the Council on Pharmacy and Chemistry provide that the acceptance of an article that is advertised to the public with unwarranted claims shall be summarily rescinded. The Council voted to omit Viking Palatable Cod Liver Oil from New and Non-official Remedies because it is advertised to the public with claims that are objectionable and unwarranted. (Jour. A. M. A., May 4, 1929, p. 1521.)

## CASE OF UNDULANT FEVER IN AN INFANT\*

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WITHIN the last few years cases of undulant fever have been recognized with increasing frequency throughout the country. Recently Hardy<sup>3</sup> reported a series of cases in Iowa; a similar series is being compiled at the present time in Minnesota. All authors consider the disease rare in children, particularly in infants. The youngest case in Hardy's<sup>2</sup> series is a child of twenty-two months.

Alice Evans<sup>1</sup> states that the youngest patient among sixty-five diagnosed through serum sent to the Hygienic Laboratory at Washington, was four years of age.

The patient mentioned in the following case, one year of age, is one of the youngest on record.

### CASE REPORT

Patient K. M., male, one year old, was referred by Dr. Ehmke of Willow River, Minnesota, on March 18, 1929. The pre-eminent complaints were:

1. Paleness; of one month's duration.
2. Vomiting, occurring about once every two days.
3. Listlessness.
4. Poor appetite.

The child had become sick about a month previously, apparently with a cold. During this interval he had been running fever most of the time. He had coughed some and lost a good deal of weight.

*Family History:* Essentially negative.

*Past History:* The child was born March 1, 1918, at full term; birth weight, 8 pounds. Breast fed for two months, he was subsequently fed on a cow's milk formula. Cereal and vegetables were given at the usual time. The milk in the formula was supplied exclusively by two cows, neither of which have been tested for undulant fever agglutination. There were no previous illnesses with the exception of several mild colds.

*Physical Examination:* The child was extremely pale, weighed 8,720 grams, temperature 102°. The skin was rather dry, the mucous membranes decidedly pale. The throat showed no acute inflammation. His tonsils were moderate sized, the cervical glands just palpable. The ear drums were normal. Lungs were clear to percussion and auscultation. The left heart border was one centimeter outside the nipple line with a systolic murmur heard over the whole heart. The liver was one and one-half fingerbreadths below the costal margin. The spleen was two fingersbreadths below and of moderate firmness. There was some

grooving of the chest and some enlargement of the epiphyses.

X-ray of the chest showed a little mottling at the right hilus, somewhat increased over normal, and a slight increase of cardiac shadow.

*Hospital Course:* He was in the hospital from March 18, 1929, to April 19, 1929.

During the first seven days his temperature was very irregular, ranging from normal to 102-103°. It dropped to normal gradually on the seventh day and remained so during the rest of his hospital stay.

Blood transfusion was performed on March 21, 1929, with no resultant reaction. Two hundred c.c. of blood from the mother were given by the citrate method.

During the febrile period he was extremely fussy, restless, and irritable, and had copious sweats. Shortly after he became afebrile his general condition improved and the sweating ceased. Definite improvement in his behavior became evident by April 2 and continued steadily up to the time of discharge. His weight on discharge was 9,920 grams, a total gain of 1,200 grams in one month. He appeared quite well at this time, his color was good and he was happy. His general physical condition was normal, the heart sounds were normal, the spleen was still one fingerbreadth below the costal margin. He has continued to improve at home up to the present.

As continuous search for a focus of infection had been unavailing, blood was taken for undulant fever agglutination on March 24, 1929, and sent to the State Laboratory. Report was received several days later of the agglutination of bacillus abortus in a titre of 1 to 160. Blood was again taken for agglutination on March 31; agglutination occurred in this specimen in a titre of 1 to 640. A specimen taken at the same time and sent to the Public Health Service, Hygienic Laboratory, Washington, D. C., produced a positive agglutination of the bacillus abortus in a titre of 1 to 1280. Agglutination of the bacillus tularensis was not obtained.

### LABORATORY DATA

*Blood:* March 18. The Hb. was 38%; R. B. C. 2,240,000; W. B. C. 14,000. Differential: PMN's 17%, lymphocytes 77%, Eosin, 1%, Mono. 5%.

A blood smear showed hypochromasia, with anisocytosis three plus; poikilocytosis three plus; and some polychromatophilia; the large lymphocytes predominated. Dr. P. F. Eckman, who examined these smears, considered this a toxic secondary anemia because of the evidence of blood regeneration, the short history and the severity of the anemia.

On March 22, the day following transfusion, the Hb. was 50%; R. B. C. 3,750,000. On April 15, the Hb. was 65%; R. B. C. 4,280,000.

The differential remained fairly normal with the exception of shifts in the relation of the lymphocytes

\*From the Department of Pediatrics, the Duluth Clinic, Duluth, Minnesota.

and PMN's, the lymphocytes at times being as high as 70%.

**Urine:** Numerous urine examinations were, on the whole, negative.

**Miscellaneous:** Von Pirquet and intradermal tuberculin reactions (up to one milligram) were negative. Widal test of March 21 was negative. Blood culture of March 21 negative. Blood Wassermann March 21 negative.

A specimen of the mother's blood produced no agglutination of the bacillus abortus.

#### COMMENT

A definite instance of undulant fever is presented in a male child, one year of age. The

unexplained fever range with the extreme sweating and pallor proved to be significant in the symptom complex. Serum agglutination tests cleared up the diagnosis. The high grade anemia is said not to be a common complication. This boy is now rapidly improving.

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#### THE MARMOLA QUACKERY

Edward D. Hayes has been quacking it for a quarter of a century. Using the trade name "Marmola Company" he exploited a thyroid-containing mixture—Marmola. In 1926 the postal authorities were about to issue a fraud order against the Marmola Company when Hayes submitted an affidavit declaring that he would discontinue the Marmola business. He did so by changing the name of the Marmola Company to the Raladam Company! He continued to sell his nostrum through the drug stores instead of through the mails. Now the Federal Trade Commission has issued an "Order to Cease and Desist," the essential features of which are that the firm cease and desist from representing that Marmola is a scientific and accurate method for treating obesity; representing that the formula from which Marmola is made is a scientific formula; and representing that Marmola can be taken without the advice and direction of a competent medical authority as a safe and harmless remedy in the treatment of obesity. (*Jour. A. M. A.*, May 4, 1929, p. 1541.)

#### THE RENTAL OF RADIUM

The Council on Physical Therapy publishes a report on the rental of radium which was approved by the Council on Pharmacy and Chemistry. The Council points out that during the last few years some of the firms supplying radium, as well as a few individual radiologists, have undertaken to prepare and to furnish radium to physicians on a rental basis. Rental has not been limited to radiologists, who might be expected to know how to make proper use of the radium, but the intent of this service is to enable any physician to treat his own patients. The Council feels that the rental of radium to physicians cannot be entirely condemned; but, since the physician renting the radium must assume full legal and moral responsibility for the diagnosis and treatment of his patients, the Council does condemn the system of "mail-order" and telephone diagnosis and the type of treatment with which such rental has come to be associated. (*Jour. A. M. A.*, May 18, 1929, p. 1678.)

## GALLSTONE ILEUS\*

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A RECENT analysis of twenty consecutive cases of acute intestinal obstruction showed a mortality of 65 per cent. The causes of death were chiefly inadequate pre-operative and post-operative care and delayed operation. With proper care and early operation, the mortality should be below 15 per cent.

A study of the mortality statistics in ileus suggests that the less frequent causes give the highest mortality. Ileus due to gallstone is rare. Surgical treatment is often delayed because of the confusing early incomplete obstruction followed by progression of the stone and changing locations of the suspected condition. The mortality from this cause is about 70 per cent.

Gallstone ileus occurs so rarely in the experience of any surgeon that it always arouses interest. Considerable literature on the subject has been contributed and the articles are usually based on one case. Prior to 1910 two hundred and fifty cases had been reported.

Bartholin<sup>2</sup> is reported to have published in 1654 an instance of a gallstone having perforated from the gallbladder into the jejunum.

Courvoisier<sup>4</sup> in 1890 directed attention to the various stages and complications of gallbladder disease and as a result placed this complication and many others on a definite basis.

The frequency of occurrence has been variously stated by several authors. Mayo Robson<sup>5</sup> reports that in 80,000 hospital patients in four large British hospitals the condition occurred four times. Barnard<sup>6</sup> reported eight cases of gallstone ileus among three hundred and sixty cases of intestinal obstruction occurring during an eight year period at the London Hospital. One of the English Royal Infirmarys had one case in 50,000 admissions.

Bloodgood<sup>8</sup> in reporting upon a series of two hundred and eighty cases of intestinal obstruction described one case due to gallstone. Martin,<sup>9</sup> while Professor of Surgery at the University of Maryland, sent a questionnaire to a group of surgeons and received replies from twenty-eight whose experience he estimated at a half million

surgical operations. Sixteen cases of gallstone ileus were reported to him.

Courvoisier placed the age limits as between fifty and seventy, and from other reports the average age limit is placed at fifty-five.

The sex incidence is comparable to that of cholelithiasis. Martin placed it in his study as occurring five times more often in females.

The mortality is variously stated and seems to average somewhat higher than in intestinal obstruction in general, and is placed at about 70 per cent.

Gallstones large enough to cause obstruction enter the intestine by three ways:

1. By extension of inflammation they pass directly from the gallbladder to the intestinal tract, usually from the neck of the gallbladder to the duodenum. If they pass into the stomach they may be vomited; if into the colon they are passed in the stool.
2. They may pass from the common duct to the intestine.
3. The progression may be from the cystic duct to the intestine.

In causing obstruction they are usually lodged in the lower ileum near the ileo-cecal valve.

Because of the rarity and unusual character of the occurrence of gallstone ileus, diagnosis must at best be highly speculative. If there is complete interference with the onward movements of the contents of the bowel, well defined and characteristic symptoms of obstruction will develop. The obstruction is seldom complete in the early stages and this accounts for the rather frequent long duration of symptoms. It is natural that incomplete obstruction should fail to produce a real strangulation of the bowel, but would account for a spasm of the muscular fibers of the intestine, and thus less severe symptoms than are characteristic in a complete obstruction. According to Barnard, the characteristic symptoms are the sudden onset, the absence of pain and collapse until late in the attack, the incomplete obstruction and the absence of tenderness and distention in the abdomen. The painful point is occasionally found to be migratory.

\*Read before the Minneapolis Surgical Society, Feb. 2, 1928.

Vomiting is a prominent symptom, being severe and continuous.

The clinical history, when one is confronted with a case of intestinal obstruction, may give evidence of previously existing gall-bladder disease. The most frequent mode of entry of the gallstone into the bowel is by a gallbladder-duodenal fistula. It seems probable, therefore, that in a case of previous acute cholecystitis, a fistula is formed between the gallbladder and the duodenum; that this then subsides and at some later date the gallstone is extruded through the fistula and at a time when the symptoms of cholecystitis are not present.

Treves<sup>8</sup> reported a case where the stones were thought to have remained in the bowel ten years and Mayo Robson has cited a fatal case in which the stone weighed only 55 grains.

#### CASE REPORT

An obese woman of 67 years was first seen on Saturday, December 3, 1927, and recognized as having intestinal obstruction from the fact that she appeared acutely ill, was having repeated attacks of vomiting of a brownish fluid with a fecal odor, and complaining of severe colicky cramps in the left lower quadrant of her abdomen. She had first been seen by a physician on the previous Sunday (six days before). She had had no bowel movements since the previous Tuesday (four days). On the previous Thursday she had vomited fecal material.

Her past history revealed occasional gastric upsets for "many years"; these were characterized by belching of gas, sour taste in her mouth and distaste for food. The attacks seldom lasted longer than two or three days and were usually relieved by milk of magnesia. Occasionally she called in the family doctor. There was no history of pain, jaundice, or clay colored stools.

On physical examination, tympany was elicited over the left upper quadrant of her abdomen; the left lower quadrant was moderately tender but flat, and her attacks of pain were confined to this area. There was some tenderness on the left side to pelvic examination.

The leukocyte count was 16,000, with a slight increase in polymorphonuclears. The temperature was normal. A barium enema showed no abnormal findings.

The operative procedure was as follows. Four inch mid-right rectus incision. The gallbladder was palpated and numerous adhesions were felt in this region. No further procedure in this area seemed warranted. The kidneys were normal to palpation. The pelvis was palpated and the uterus, tubes and ovaries were found normal.

On sweeping the hand up from the pelvis on the left side, a round object about the size of a golf ball (Fig.

1) was encountered which gave the impression of being free in the peritoneal cavity. On bringing the mass into the wound, it was found to resemble a hard ball which was firmly fixed in the lumen of the intestine and could not be moved in either direction. The bowel above the obstruction was moderately distended and below the obstruction it was collapsed. It had a pur-

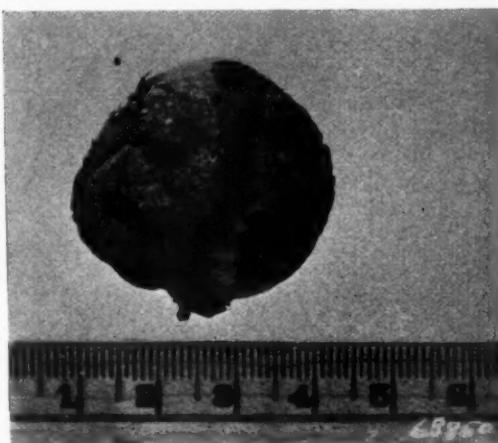


Fig. 1. Gallstone removed from ileum.

plish color, indicating a moderate degree of strangulation.

The bowel was incised longitudinally over the obstructing stone and the stone pried through an opening which was slightly smaller than the circumference of the stone. The wound in the bowel was immediately aspirated toward the distended site and it was closed by two layers of intestinal catgut after the method of Lembert. The abdomen was then closed in tiers, using four heavy dermal stay sutures and a Penrose drain to the peritoneum. The stomach was washed out at the close of the operation.

*Postoperative Course.*—A graphic representation of the postoperative course is afforded by examination of the chart (Fig. 2). Summarized, it is as follows:

1. The fluid intake in the first twenty-four hours was a little over five liters, administered by hypodermoclysis, proctoclysis, and limited small amounts of fluid by mouth. Half of this amount was normal saline, which amount seemed adequate to provide enough chloride replenishment. (No determination of the plasma chlorides was made until the fourth day, when it had returned to normal.) Obviously, the fluid intake was the most important contribution in this case aside from relief of the obstruction. Fluids were forced to the limit of her capacity to take them during the succeeding three days.

2. She had several small emeses during the first forty-eight hours; accumulations in the stomach were relieved by gastric lavage.



calls for consideration from at least five standpoints:<sup>6</sup>

1. Relief of the obstruction. The matter of early diagnosis being vitally important to the successful outcome, this procedure obviously entails mature surgical judgment and technical skill.

2. The treatment of dehydration begins in the severely toxic patients before operation. Fluids, combined with the one effective agent we now have in combating the toxemia, namely, sodium chloride, should be given in solutions ranging from the isotonic to the five per cent strengths.

3. The toxemia. In recent years (since MacCallum and his associates determined the reduction in blood chlorides in cases of acute intestinal obstruction) the hypochloremia has been recognized as one of the most important lethal factors, and numerous results have been reported on the effectiveness of saline treatment in lowering the mortality. The physiological action of the

sodium chloride, however, is not yet wholly understood.

4. Relief of the obstructed intestine, for which the procedures of enterostomy or duodenal drainage have been variously recommended.

5. Relief of the starvation. This is probably the least difficult of the problems to meet and can be accomplished, when indicated, by glucose, which also is of advantage in the control of vomiting.

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## LESIONS OF PERIPHERAL NERVES\*

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IT is a just reproach that clinicians are sometimes slow to utilize advances in the fundamental medical sciences yet, if we make a broad survey of modern medicine, we must be struck by the tendency it has displayed from time to time to draw closer to one fundamental science. Thus, John Hunter evolved a new surgery from his researches in comparative anatomy and physiology; with Lister, attention was focussed on bacteriology and the present trend is toward a closer relationship with biochemistry and biophysics. While the surgeon of today knows that treatment, to be rational, must have a physiologic basis, there is much leeway to be made up, and this is well exemplified by the subject under discussion.

Let us consider briefly what happens after complete division of a peripheral nerve. In the course of time, the axis cylinders and their myelin sheaths disappear from the distal segment. The cells of the neurolemma persist, and even increase, in both number and size, occupying the unaffected connective tissue of the segment. These appearances are described in any textbook on surgery. But, when the books tell us that after suture of a divided nerve, axons from the central segment grow down into the old neurolemma sheaths, obligingly waiting to guide them to the periphery, they perpetuate a wrong conception, which, like all such, is hard to dispel. Long ago it was pointed out by Cajal that many of the outgrowing axons tend to pass between the old neurolemma sheaths, and may not enter a sheath at all; it follows that the chance of an axon reaching its original ending is, to say the least of it, remote. Therefore, after even the most favorable case of nerve suture, we must rely for sensation largely, if not entirely, on those fibers the destined habit of which it is to end naked, and for motion, on those motor axons which chance to reach muscle fibers. These anatomic data may seem a frail groundwork for the excellent functional results which follow nerve suture in favorable cases. When we seek

for the additional factor which makes such good results possible, we find it to be the amazing capacity for re-education inherent in the human cortex. We can better appreciate how important it is that this knowledge should dominate our treatment if we turn for a little to the technical side of our subject.

### INVESTIGATION OF INJURIES TO PERIPHERAL NERVES

*Motor palsy.*—It is necessary to distinguish between a muscle acting as a prime mover and acting as a fixation muscle, for example, extension of the wrist on making a fist may occur after injuries to the musculospiral nerve, although voluntary extension of the wrist is impossible.

*Trick movements.*—These may be a pitfall if one is not on the lookout for them. Sometimes they are consciously used by the patient, as when the wrist is flexed by abductor pollicis longus (extensor ossis metacarpi pollicis). Again, when the wrist is extended, there may be sufficient passive shortening of paralyzed flexor tendons to enable the patient to grasp an object. On the other hand, there is a type of trick movement which depends on our position in the animal series. In the course of evolution, the power to start voluntary movements has been gradually displaced from spinal cord to cortex, and with change of site there comes also change of manner of control. When the cord is in control, the lower motor neurons act in terms of muscles only. The cortex acts in terms of movements, with no thought of individual muscles and is likely to force into service any other available muscles if those habitually performing a movement are paralyzed. The resulting movement is rarely pure; thus, after musculospiral and musculocutaneous palsy, the elbow still can be flexed by the pronator-flexor group of forearm muscles but flexion of the elbow is now accompanied by pronation of the forearm. It must also be remembered that a muscle may have two actions; in ulnar palsy, for instance, the extensors, common and special, are able to abduct the fingers.

\*From the Section on Neurology, The Mayo Clinic, Rochester, Minn. Submitted for publication May 16, 1929.

As in other trick movements, the result is not pure; with abduction, there is extension.

*Electrical reactions.*—Experience has shown that too much stress has been laid on polar changes in the response to the galvanic current as a guide to the condition of a muscle. One tests first with the faradic current; if the muscle responds, no further test is necessary. If there is no faradic response, one tests with the galvanic current for the reaction of degeneration. This type of muscular contraction is characterized by its long period; the process of relaxation is much slower than that of a normal muscle. In passing, it is wise to beware of the tibialis anticus; this muscle may respond to the faradic current for some time after division of its nerve.

*Sensory functions.*—Any one who has mapped out the anesthetic areas which follow lesions of peripheral nerves knows that the field may vary from time to time in any one case. Among the factors which influence such observations, may be mentioned the comfort of the patient, which includes an easy position and a warm condition of the part to be tested. Time spent in explaining to the patient the object and mode of examination is not time lost; to begin an examination without such preliminaries is to puzzle and possibly to antagonize him.

1. The deep pressure sense is important from an orthopedic standpoint, as a check on the integrity of any tendons passing to the part; for usually that sense is preserved if these structures are intact.

2. The area over which painful sensation is lost is, as a rule, ill-defined. For several days after the complete division of a nerve, and later while regeneration is going on, this area is surrounded by a band usually called "hyperesthetic." The term is a bad one, as these areas are really zones of diminished sensibility, in which uncomfortable stimuli give rise to over-reaction.

3. The area of loss of light touch is hardest to map out. This is partly because the sensitiveness of the skin varies with the occupation of the patient, and also because hairy parts feel more acutely than do bare parts. If the whole area is shaved, the outline of lost "light touch" will be found to conform more closely to that of the anatomic distribution of the nerve.

*Functions subserved by the sympathetic system.*—Signs of paralysis in the sympathetic

system are most marked after division of the median, ulnar and sciatic nerves. Interruption of the vasoconstrictor fibers leads to vasodilatation of the anesthetic skin. In the same area, there is loss of sweating, and the superficial layers of the epidermis become so thickened that the skin loses its normal elasticity. The so-called trophic ulcer is usually the result of an injury unnoticed because of the anesthesia. A point which awaits explanation is the readiness with which these ulcers heal after nerve suture, even before conduction has been established in the peripheral segment of the injured nerve.

#### DIAGNOSIS

Organic lesions of nerves can usually be distinguished from hysterical paralyses by taking advantage of the patient's ignorance of anatomy and physiology. In cases of functional disorder, paralyzed muscle may be found to contract synergically; for example, the extensors of the wrist and fingers may contract while the patient shakes hands. The electrical reactions of such pseudoparalyzed muscles are normal. It must be ruefully admitted that, in spite of the integrity of the nerve trunks, these cases are often harder to treat than those in which a nerve has been divided.

#### INDICATIONS FOR OPERATION

The following indications for operation were framed as a result of the experience of those British surgeons who dealt with injuries of peripheral nerves in the war.

1. "Total loss of conductivity, sensory and motor, in the territory exclusively supplied by a nerve, persisting after an interval of two months during which proper treatment has been carried out. This interval is an arbitrary one; it allows time for the first appearance of signs of recovery, provided the lesion does not necessitate the lengthy process of regeneration."

2. "Palpable neuromas at the site of injury of a nerve, the function of which is seriously disturbed."

3. "When recovery has begun, but has not progressed according to the usual rate, or has actually ceased; still more when function has relapsed."

4. "Persistent, severe, intractable pain." In the case of this lesion of peripheral nerves

which come under the care of the neurosurgeon after some operative procedure elsewhere, the intervals allowed for signs of regeneration should be longer, although it must be confessed that the majority of these cases requires reoperation. Perhaps some anatomic error has been committed, such as the uniting of the proximal end of a nerve to the peripheral end of a cut tendon; or the procedure adopted may have been insufficiently radical or physiologically unsound. Operation should not be undertaken if recovery is proceeding with normal rapidity, or when the ultimate outlook is bad even if technical difficulties can be overcome, as, for example, when the great sciatic nerve is injured within the pelvis. If the original wound has been infected, interference must be postponed until about two or three months after it has healed; nothing vitiates an anastomosis so completely as a lighting up of latent sepsis in the operative field.

#### OPERATIVE TECHNIC

Apart from asepsis and hemostasis, which, as in any operative procedure, must be absolute, the vital step is the free exposure of the nerve both above and below the site of injury before any attempt is made to deal with the lesion. If there is evident loss of continuity, resection and suture is the obvious treatment. Neurolysis is carried out in cases of two types: when a nerve of normal appearance is compressed by scar tissue, and when a nerve trunk is swollen for a considerable length. In the case of a diffusely swollen nerve, the decision to free and not to resect may be reached after the demonstration, by direct faradic stimulation, of some remaining conductivity. If the lesion is circumscribed and is not diffuse, it is best to resect it and resuture the nerve.

Resection of end bulbs must be carried out until individual nerve bundles are visible. This step also tends to equalize the sectional areas of the end to be united, an important factor in ensuring that as many axons as possible find their way into the peripheral segment. The gap between central and peripheral segments which is left after resection of the end bulbs may be greatly reduced by freeing both segments for a considerable distance. The path pursued by the nerve may be shortened by flexing the joints over which it passes. Some nerves, for example the

ulnar, may be transplanted to a more direct route. And finally, if all these expedients seem likely to fail, the end bulbs may be tied together, with the limb in such a posture that the course of the nerve is the shortest possible. The limb is then gradually straightened, and in two or three weeks the wound is reopened. It will usually be found that the nerve has been lengthened sufficiently to make suture possible.

With regard to method of suture, there is none of election. Given fine suture material, care in handling the nerve, accurate approximation, and not too tight tying of sutures, it seems to matter very little whether one employs catgut or silk, and whether the stitches are placed in the sheath or through the nerve.

#### POSTOPERATIVE TREATMENT

Postoperative treatment is directed toward the following points: prevention of overstressing of paralyzed muscles by maintaining the limb in a suitable posture; prevention of adhesions between tendons and their sheaths and adhesions in peri-articular structures, and maintenance of nutrition in paralyzed areas.

A suitable posture is readily attained by the use of splints, but for the prevention of adhesions, it is all-important that certain parts of the limb shall not be continuously immobilized. Large joints are not so likely to become stiff during fixation; but small joints, especially those of the wrist and fingers, must be given freedom of movement, and they require daily active or passive exercising if their suppleness is to be preserved. The best type of splint allows limited movement of certain joints, and even provides for the fixation action of the paralyzed muscles. In adjusting the limb on the splint, constricting bandages are to be avoided, since a tight bandage may so limit the blood supply to paralyzed muscles as to vitiate the result of nerve suture in an otherwise hopeful case.

Nutritional treatment is highly important, although sometimes it is neglected; it is important because when the growing axon finally arrives at its journey's end, it must find an end organ capable of resuming its function in the economy; it is neglected not so much by the surgeon as by the patient, who is often little disposed for the period of persevering after-treatment, without which the end-result will be poor. In heat we have a most

useful aid, easily available as the hot bath; when trophic ulcers are present, radiant heat may be used instead. Massage, which must be regular and methodical, not only improves tone, but also removes from the whole area katabolic products which may accumulate as a result of sluggish blood supply. Electrical stimulation of the paralyzed muscles is useful if it is intelligently applied. It is essential that the parts be well warmed. At first the current employed is the galvanic; each muscle must be stimulated individually and the strength of current used is the weakest which will cause contraction of the muscle stimulated. When faradic excitability returns, the weakest effective faradic current may be substituted for the galvanic, or a sinusoidal current may be used. From the beginning of treatment, the physical therapist must have the confidence and coöperation of the patient. While waiting for the recovery of motor power, the patient must learn the action of each muscle, so that when voluntary power begins to return, he can focus his attention on using it. At first, the muscle may be aided passively by the masseur, and the palsied muscle must never be overtaxed. It is better to do too little than too much.

Of all the stages in the treatment of injuries of peripheral nerves, the postoperative period is by far the most important. From the brief description given, it will be seen that it is directed, from a physiologic point of view, to two purposes: to keep muscles and joints in a state of as great mechanical perfection as is possible, and in due course to put each effector unit to its ordained use, and enable each receptor unit to resume its contact with the external world.

It is manifest that such complete recovery is never possible, if we allow for the way in which the axons of the central portion of a nerve attempt to reëstablish peripheral connections after nerve anastomosis. Now, it is well known that excellent functional results are obtained after nerve anastomosis in suitable cases. To what are we to ascribe these functional recoveries, in the teeth of such unsuitable and even unusable anatomic rearrangements of nerve pathways? The key to success lies in prolonged and painstaking re-education. This is commonly called "muscular re-education," but this is a misnomer. The re-education is, and must be, cortical, and cortical alone. Recovery always will vary directly with the ability of the subject to train his own cortex to interpret correctly data reaching it through pathways which have hitherto subserved other areas, and to set into action his recovering muscle groups by way of unaccustomed upper motor neurons. It is little to be wondered at that the process of recovery is prolonged; as a corollary, if it be found tedious, the final result is likely to fall short of the best which is possible. Anyone who has dealt with these injuries must have noted that, other things being equal, the intelligent and interested subjects will always achieve the best functional results. Further, it is vital for the surgeon who planned and performed the operation to control, and, if possible, personally to supervise, the whole of the after-treatment. He must never relax nor allow himself nor his patient to become discouraged; that way lies the easy path of adoption of trick movements and the possibility of obtaining the best functional result is gone forever.

# THE PHYSIQUE OF SMOKERS AS COMPARED TO NON-SMOKERS\*

A STUDY OF UNIVERSITY FRESHMEN

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THE effect of tobacco smoking long has been the subject of controversy and speculation. Much positive opinion, for the most part unsupported by scientific evidence, is expressed to the effect that smoking is deleterious to health. Experimental evidence seems to show certain physiological and psychological effects of smoking, but whether these effects are permanent or transitory is not clear. Comparative studies of the physique of smokers as compared to non-smokers have been one approach to the problem of determining the effect of tobacco upon growth and health. It is for the purpose of placing on record some further data of this sort that the present study is presented.

## METHOD OF STUDY

At the time of entrance to the University of Minnesota a complete physical examination is performed upon each student and certain data concerning past illnesses, previous health and habits of living are recorded. Included on the examination blank is a question as to whether or not the student smokes. Based upon the replies to this question two groups of students were selected for purposes of comparison. The students in one of these groups stated that they smoked and the ones in the other group that they did not smoke. From the physical examination records of these students certain physical defects and anthropological and physiological measurements were recorded. Tables I and II show tabulations of the data studied.

## COMPARISONS OF DATA

The total number of students in the group of smokers studied was 445 and in the group of non-smokers 441. Comparison of the items for the two groups which appear in Table I, such as age, height, weight, etc., has been made by computing the mean and the probable error of the mean for each item, taking smokers and non-smokers separately. The differences between

these means, with their probable errors, are shown in columns three and four. Column five gives the possibilities of the chance occurrence of a difference as great as or greater than the difference found. If there is one possibility in five that the observed difference is merely the result of chance, one would feel that the difference probably is not sufficiently great to be significant. On the other hand, if there is only one possibility in a hundred that a difference as great as the one observed could occur from chance alone, one could assume with reasonable certainty that the difference is insignificant.

## PHYSICAL AND PHYSIOLOGICAL MEASUREMENTS

**Age:** The mean age of the students who smoke was almost one-half year greater than the mean age of the non-smokers. Statistically this difference is probably significant. This, of course, indicates nothing except that the smoking habit increases quite rapidly with age among young men. However, this difference in age needs to be considered when comparing items which change markedly with age, such as height, weight, etc.

**Height:** The Table shows no significant difference between the heights of the two groups. Since the average annual increment of growth at this age is about one inch, to correct for the difference in the age of the two groups mentioned in the preceding paragraph, one would need to subtract one-half inch from the height of the smokers. This would make the difference between the groups  $.06 \pm 1.14$  in. Even with this correction, however, the actual difference is less than the probable error of the difference, so the difference is without significance.

**Weight:** In the findings shown in the Tables the mean weight of the smokers is  $0.934 \pm .77$  lbs. greater than the mean weight of the non-smokers. To correct for the difference in age one would have to subtract 0.7 lbs. because the average annual increment in weight at this age is 1.4 lbs.,

\*From the Students' Health Service and Department of Preventive Medicine and Public Health, University of Minnesota.

TABLE I  
PHYSICAL AND PHYSIOLOGICAL DATA ON SMOKERS AND NON-SMOKERS

	Mean for Smokers	Mean for Non-Smokers	Difference of Means		Possibilities of a chance difference as great as or greater than the observed difference (approximate)
			Smokers Greater	Non-Smokers Greater	
Age	19.92±.08 yrs.	19.47±.09 yrs.	0.45±0.12 yrs.		1 in 90
Height	68.66±.79 in.	68.67±.82 in.		0.01±1.14 in.	1 in 1.1
Weight	142.46±.54 lbs.	141.53±.56 lbs.	0.93±0.77 lbs.		1 in 2
Ht/wt Percentage	98.11±0.31	97.92±0.32	0.18±0.44		1 in 1.3
Vital Capacity Percentage	104.04±0.36	104.63±0.33		0.59±0.49	1 in 2
Systolic Bl. Pr.	125.06±0.40 mm.	123.99±0.37 mm.	1.07±0.54 mm.		1 in 6
Diastolic Bl. Pr.	73.17±0.39	74.78±0.39 mm.		1.61±0.52 mm.	1 in 27
Pulse Rate	80.17±0.36	79.92±0.40	0.25±0.54		1 in 1.5
Physical Fitness Test Grade	9.75±0.14	11.49±0.16		1.74±0.21	1 in 15,000,000

TABLE II  
PHYSICAL DEFECTS, ET CETERA, OF SMOKERS AND NON-SMOKERS

Size of Home Community	Percentage Incidence	Difference in Percentage Incidence		Possibilities of a chance difference as great as or greater than the observed difference (approximate)
		Among Smokers	Among Non-Smokers	
Over 50,000 Population	37.52±1.56%	30.68±1.45%	6.44±2.08%	1 in 27
From 5,000 to 50,000 Population	21.12±1.35%	12.50±1.11%	8.62±1.57%	1 in 10,000
From 1,000 to 5,000 Population	19.32±1.32%	18.40±1.27%	0.92±1.83%	1 in 1.5
From 50 to 1,000 Population	8.31±.88%	12.50±1.11%		4.19±1.41%
Less than 50 Population	8.76±.90%	21.81±1.29%		13.05±1.57%
Nasal Spurs Obstruction or Marked Septal Deviation	45.59±1.59%	46.14±1.61%		0.55±2.26%
Tonsils, Hypertrophied	10.11±.96%	10.23±.97%		0.12±1.36%
Tonsils, Pathological	9.21±.92%	7.95±.86%	1.26±1.25%	1 in 2
Dental Caries	30.51±1.46%	30.00±1.47%	0.51±2.07%	1 in 1.2
Impaired Hearing	3.82±.61%	3.64±.60%	0.18±.85%	1 in 1.1
Albuminuria	7.35±.87%	8.18±.87%	0.83±1.22%	1 in 1.7
Glycosuria	0.44±.21%	0.23±.15%	0.21±.24%	1 in 2
Posture Rating A	15.73±1.60%	10.20±1.26%	5.35±2.03%	1 in 12
Posture Rating B	52.35±1.64%	59.09±1.51%		6.74±2.22%
Posture Rating C	1.12±.48%	5.68±.97%		4.56±1.08%
Posture Rating D	0.20±.21%	0.22±.21%		0.02±.29%
Final Physical Rating A	82.81±1.30%	84.54±1.21%		1.73±1.85%
Final Physical Rating B	13.52±1.18%	12.81±1.11%	0.71±1.61%	1 in 2
Final Physical Rating C	3.71±.65%	3.73±.54%		.02±.84% 1 in 1.02

making the corrected difference  $0.23 \pm 0.77$  lbs., a finding certainly not significant.

*Height-weight percentage:* The ratio of each student's weight to the standard weight for a corresponding age and height was calculated and expressed in percentage. The difference between the groups, being less than the probable error of the difference, is without significance.<sup>†</sup>

*Vital Capacity:* The vital capacity was expressed as percentage relationship to the standard tables of vital capacity according to weight, prepared by Myers.<sup>1</sup> The average vital capacity of the non-smokers was slightly greater than that of the smokers but the difference is not sufficiently great to be significant.

*Blood Pressure:* The mean systolic blood pressure of the smokers was higher than that of the non-smokers but their mean diastolic pressure was lower than that of the non-smokers. In neither instances, however, is the difference large enough to be beyond the possibilities of chance. If we combine these two findings we note a rather high pulse pressure for smokers as compared to the non-smokers.

*Pulse rate:* The difference in the pulse rates of the two groups is not as large as the probable error of the difference, hence, it is certainly without significance.

*Physical Fitness Test:* The Schneider physical fitness test<sup>2</sup> which was used on aviators during the world war is included as part of the entrance examination. This test, since it is based on the pulse rate and blood pressure reclining, standing and after exercise, is really a measure of the reactivity of the individual's cardio-vascular system. The grades which students make on this test vary from -5 to +18 with the great majority falling between +5 and +15. The average higher grade of  $1.74 \pm 0.21$  made by the non-smokers is significant. The interpretation of this finding is that smokers have less stable cardio-vascular systems than non-smokers. The effect of such a difference upon health or longevity never has been determined.

#### PHYSICAL DEFECTS AND HOME COMMUNITY

*Size of Home Community:* The community in which a student had spent most of his life before coming to the University was considered as his home. These home communities were grouped

according to size and comparisons made for smokers and non-smokers as shown in Table II. These percentages indicate that the proportion of smokers is greatest among students who come from cities of 5,000 and over and lowest among students from rural communities and villages.

*Anormalities of Nose and Throat:* The nasal conditions which were listed as abnormalities were nasal obstruction, large spurs or marked septal deviation. The incidence of these conditions among smokers and non-smokers was practically the same. "Hypertrophied tonsils" and "pathological tonsils" also occurred with approximately equal frequency in the two groups.

*Dental Caries:* The only condition of the teeth which seemed satisfactory for purposes of comparison was dental caries. This defect occurred with approximately equal frequency in the two groups.

*Impaired hearing:* Hearing tests on these examinations were made by means of a watch. The incidence of impaired hearing was slightly greater, although not significantly so, among the students who smoked.

*Posture:* Posture ratings of students were made on the basis of schematograph tracings. The percentages show a higher proportion of A ratings among students who smoke but a higher proportion of B and C ratings among the non-smokers. The D ratings occurred with equal frequency in the two groups. These differences in posture ratings should be discounted somewhat because the posture grade is based primarily upon the subjective judgment of the examiner.

*Urinary Findings:* The difference between the occurrence of albuminuria and glycosuria in the two groups is not significant.

*Physical Rating:* Upon the completion of the examination a physician reviews the examination record with each student, explains the significance of the various findings, makes recommendations for the student to follow and writes on the record a "final grade" of A, B, C, or D. This grade is based upon the physician's judgment of the record as a whole and is the basis for assignment of the student to a program of physical activities. The A ratings were slightly more frequent among non-smokers and the B ratings among smokers. The difference, however, is hardly significant. C ratings, which mean for the student only supervised physical

<sup>†</sup>For this purpose the height-weight tables of the American Life Insurance Companies were used.

education with no drill or athletics, are found with equal frequency in the two groups.

#### COMMENT

Results of studies on the effect of tobacco smoking upon health and physique in groups of persons as young as these cannot be considered as final because by persons of 19 years of age the habit has not been practised sufficiently long for degenerative effects, if there are any, to have proceeded very far. On the other hand, by studying this age group we do obtain some information concerning the effect of tobacco upon growth and physiological processes in the period of adolescence.\*

#### SUMMARY

1. Certain data taken from the physical examination records of a group of freshmen University students who smoke is compared with corresponding data from the records of a similar number of freshmen students who do not smoke.

2. Those comparisons show that the students who smoke are slightly older and for the most part come from larger cities than the non-smokers.

\*The effect of smoking upon mental processes and scholastic accomplishment will be the subject of a later study upon this same or a similar group of students.

3. The mean height, weight, height-weight age percentage, vital capacity, blood pressure and pulse rate show no significant differences between the two groups. However, the mean grade on Schneider's cardiovascular physical fitness test is significantly lower among the smokers than among the non-smokers.

4. The physical defects compared, namely, abnormalities of the nose, hypertrophied and pathological tonsils, dental caries, impaired hearing, posture, albuminuria and glycosuria, did not show any significant differences in incidence among the groups.

5. The final ratings for purposes of classification for physical activities are not significantly different for the groups.

6. A later study will compare the "intelligence test" ratings and the scholastic accomplishment of similar groups of smokers and non-smokers.

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## OBSCURE ABDOMINAL SYMPTOMS PRECEDING EPILEPSY IN CHILDHOOD

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THE common conception of epilepsy as a sudden, brief or prolonged loss of consciousness, usually accompanied by a convulsion, overlooks many early manifestations of the disease, which are frequently not suggestive of the epileptic state. In children particularly, where petit mal attacks alone may precede the grand mal stage for months and even years, the symptoms may be of such varied nature, and so unsuggestive of epilepsy, that diagnosis may be very difficult to establish. In the typical case, the convulsion is usually preceded by peculiar and striking subjective symptoms, which comprise the aura. In the atypical case, particularly in children, the auræ alone may be the sole manifestation of the disorder for lengthy periods, eventually developing the characteristic convulsion. The auræ appear in an immense variety of forms, although in a given individual tend to always repeat themselves in the same manner. These may be motor in type, consisting of a sudden limited muscular contraction, or tremor, or automatic movements of various kinds. Visceral auræ are more difficult to diagnose, and may cause the patient to complain of precordial pain, palpitation, dyspnea, laryngeal spasm, vomiting, colic, and sudden imperative desire to evacuate the bladder or bowels. Sensory auræ, which consist of peculiar sensations commencing in the extremities or abdomen, are commonly observed in these cases. Such seizures, as enuresis during the day-time, complaints of peculiar sensations in the abdomen or head, as well as various momentary mental or psychic lapses from the normal, are, according to Shanahan,<sup>4</sup> frequently overlooked in childhood as precursors of true epilepsy. Attacks of fainting, as well as breath-holding, in early life, not infrequently are the sole forerunners of this disease. Patrick<sup>2</sup> and Levy<sup>1</sup> made careful investigations of many cases of epilepsy, revealing numerous instances wherein peculiar disturbances of various type occurred fairly regularly throughout childhood and adolescence, ultimately developing into the characteristic attacks of grand mal in adult life. These early symptoms included

momentary feeling of pressure in the epigastrium with nausea; attacks of gas in the left iliac region, with salivation and belching; nausea beginning in the chest and rising upwards.

Similar observations have been made by Peterman,<sup>3</sup> who states that about half of the cases of epilepsy begin with petit mal attacks. He suggests that the immediate cause of the epileptic convulsion is probably a disorder of the metabolism, and may be the result of a shift of the acid-base equilibrium toward the alkaline side. Disturbances of appetite, constipation, "stomach trouble," "food reactions," etc., which frequently accompany epilepsy, suggest coincident, if not primary, metabolic disorder.

Observation by the writer of a case of epilepsy which manifested obscure abdominal symptoms regularly from the age of three to six, before grand mal occurred, and in which epilepsy had not been suspected previously, prompted the investigation of this subject. Levy and Patrick found that in five hundred cases of essential epilepsy, sixty-four gave a history of recurrent attacks of symptoms which preceded the convulsions for varying periods. Thirteen of these cases presented symptoms which were essentially visceral in origin, including attacks of vomiting or belching, epigastric sensations, "queer" feelings in the abdomen, and sensation of rising gas. The youngest of this group was six years old at the onset of symptoms. Symptoms in some cases recurred for many years preceding the onset of the typical convulsions of epilepsy. These symptoms were generally characterized by regular occurrence, similarity of attacks, suddenness, brevity, and apparent lack of antecedent cause or relationship to the patient's physical condition.

The case about to be described presented regular attacks of abdominal symptoms from the fourth year of life onward. In common with most of these cases, it presented a difficult diagnostic problem, and the diagnosis was not established until the typical convulsion developed.

*Case 1.—J. G., male, age six and a half years.*

Parents, three brothers and sisters are all well.

There is no history of any nervous, mental, hereditary or degenerative disease in the family.

His past history was entirely negative. His birth was normal.

Since four years old, he has been under observation at irregular intervals for periodic attacks of abdominal pain. These occurred every four to six weeks, for two or three days at a time. During such periods he would complain of apparent pain or discomfort in the abdomen, for a few minutes, accompanied by an imperative desire to defecate, although without success. During these attacks he would become blue, he would also tremble, and have difficulty in speech. The attacks occurred from three to six times a day, having no definite relation to diet or to meals, and occasionally interrupted his sleep. The mother concluded that these attacks all caused pain, although the child did not actually seem to complain of pain.

His appetite had been poor since the onset of the trouble, and he had apparently lost weight. Physical examination revealed a thin, pale boy, weighing twenty-seven pounds, being eight pounds underweight. The tonsils were large, and apparently chronically infected. The lungs were negative. The heart was slightly enlarged, and the first sound was replaced by a loud blowing murmur, heard over the entire heart and in the left axilla. The second pulmonic sound was accentuated. The abdomen was negative, except for a small umbilical hernia, and a slight diastasis recti. Rectal examination was negative. The nervous system was negative. Tuberculin and Wassermann tests were negative.

On the supposition that his trouble might be related to his mitral regurgitation and umbilical hernia, he was put on a regime of restricted activity, a bland milk-low diet, and given digitalis, and mineral oil. Adhesive strapping was applied to the umbilicus. Later calcium bromide was also administered. The attacks continued to recur at the same intervals, and in unchanged manner, although his condition otherwise improved.

Shortly afterward his tonsils were removed by another physician.

He was not seen again until a year later, when he gave the same history of continued attacks of abdominal cramps, every four to six weeks. Between attacks he seemed well. He was sent to a hospital for further study. The heart seemed the same. The urine and stools were normal. The blood pressure was slightly elevated, being systolic 118, and diastolic 75. Roentgen study of the gastro-intestinal tract with barium was entirely normal aside from some redundancy of the sigmoid. Atropine, benzyl benzoate, and an umbilical truss were prescribed.

The boy seemed improved for the next three months, and was not observed again until fifteen months later. At this time he was undergoing a more severe series of attacks, and gave a history of having continued to be subject to them without improvement, since the last examination. On the following morning he suddenly went into a very violent general convolution continuing for three-quarters of an hour. He was unconscious for

four hours afterward, with spasticity of the legs, and trismus coincidentally. Spinal puncture revealed a clear fluid, under slightly increased pressure, but otherwise normal. The leukocyte count after the attack was 28,200. For the next three days he had several attacks of petit mal, during which he would stand in his bed, stare vacantly, gurgle indistinctly, and was unresponsive for a minute or two.

Further questioning of his mother gave a more significant description of his previous attacks, being of a type similar to those observed after the convulsion. Incontinence of the bladder or bowels had not occurred. The boy was observed to become nervous, irritable and excitable for a day or two before the attacks. His mentality was unaffected, and no previous convulsions had occurred.

The subsequent treatment consisted of luminal one-half grain, with calcium lactate fifteen grains, three times daily. After a month this was reduced to twice a day. He has since been entirely free from any trouble, for over five months; this is the longest period he has been without symptoms for three years.

The case is unusual in respect to the atypical symptoms which prevailed for nearly three years, suggesting intra-abdominal disorder, of cardio-vascular origin because of the heart condition. It also suggests the necessity for more acute observation on the part of the attendants, as well as the inadvisability of always accepting a parent's interpretation of symptoms.

*Case 2.—G. E., male, age ten years.*

This boy has had typical epileptic attacks since seven years old; during the first two years they occurred very frequently, but less often since. The attacks were frequently preceded by nausea and pain in the abdomen. For the past nine months he has had attacks of severe nausea, with pain in the abdomen, and a sensation of something turning over in the abdomen; usually a general convolution soon follows. On several such occasions the administration of ipecac sufficient to produce emesis produced relief from the symptoms, with out a convolution developing. Abortive epileptic attacks such as this with symptoms predominantly gastric in type, might easily be wrongly diagnosed as an intra-abdominal condition were the past history not available.

*Case 3.—J. V., female, four years of age.*

The family history is negative aside from a definite record of allergy, the mother having bronchial asthma, while the patient, her brother and sister have all been subject to eczema.

Her past history includes frequent attacks of asthmatic bronchitis, tonsilitis, and eczema.

Physical examination revealed very large tonsils and adenoids, and chronic papular eczema. Otherwise she was entirely normal.

The history of interest in this connection concerns several periods, each of a few weeks in duration, beginning in her third year. At such times she would at very frequent intervals, cease her play, sit in a crouching position, rub her arms, become suffused, and finally after two or three minutes would expel gas or urinate. Her parents assumed that she was in pain at

such times, although she usually did not cry, but sat in a tense, motionless position, apparently for the moment obvious to her surroundings. The attacks were never observed at night. After two or three weeks of these manifestations, she would become entirely normal, but has had recurrences every three or four months. Her mentality has been unaffected. Masturbation has not been observed. Physical examinations, as well as repeated urinalyses, have been entirely negative. The attacks have been uninfluenced by luminal, bromides, atropine, alkalies, diet, etc.

The absence of visible adequate organic pathology to explain these performances suggests a petit mal, or visceral epilepsy, as the responsible factor. Final diagnosis must be withheld pending future developments.

#### CONCLUSIONS

1. Epilepsy in childhood may frequently manifest itself for the first few years in atypical disturbances which may not suggest the underlying disease.

2. Visceral attacks of varying nature may be the only symptom, often pointing toward ab-

dominal trouble only, and may be easily misinterpreted.

3. The frequent repetition of a set of obscure correlated symptoms, with lack of organic pathology, should always warrant epilepsy being borne in mind.

4. Of particular importance in obtaining the history of such cases is the ascertaining of fleeting disturbances of consciousness. These may be frequently overlooked by the parent whose mind is fixed on the theory that the child is suffering only from attacks of abdominal pain.

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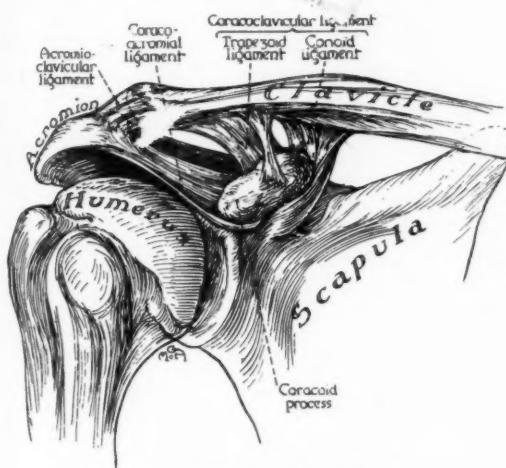
## ACROMIO-CLAVICULAR DISLOCATIONS

MYRON O. HENRY, M.D., F.A.C.S.  
Minneapolis

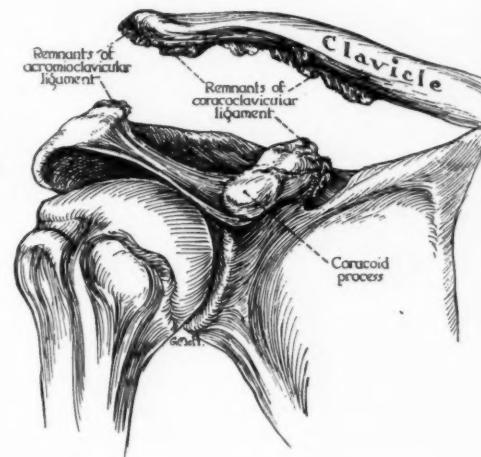
**S**INCE 1861, when Samuel Cooper performed the first operation for relief of complete dislocation of the acromio-clavicular joint, various operations have been performed to cure this disability. Metallic sutures through the joint, arthrodesis of the joint, excision of the outer end of the clavicle, silk ligaments, and tendon transplants have all been tried. In January, 1924, I performed a ligamentoplasty. I believe this condition. The technic was ori- at that time, so

injury is considered trivial, either by the patient or the physician, and occasionally it results in marked disability. The arm remains weak, and the patient is unable to do any heavy work.

Undoubtedly any operation is better than no operation in these cases, for good results have been reported by all surgeons. The operation of choice, however, is certainly that which most completely restores the normal anatomy. This, I believe, is a ligamentoplasty reconstructing



1. NORMAL SHOULDER



2. COMPLETE ACROMIOCLAVICULAR DISLOCATION

far as I know, and the operation has stood the test of time to the complete satisfaction of this patient, and of others since.

Operation is definitely indicated in those cases of acromio-clavicular dislocation in which the coracoid ligaments are torn and have not regained their function after two months or more. The incomplete or partial dislocations of the acromio-clavicular joint are common in young individuals, and frequently occur in football. These cases recover completely with early and adequate treatment. Complete dislocations, however, usually occur in older individuals, and are the result of severe trauma. These cases recover with efficient immobilization, but frequently the

the conoid and trapezoid ligaments with a fascial band. Such fascial bands, when inserted properly into bone, become true ligaments, as Osgood and Bucholtz have shown. Recently we have added a temporary suture of Krupp steel wire around the acromio-clavicular joint.

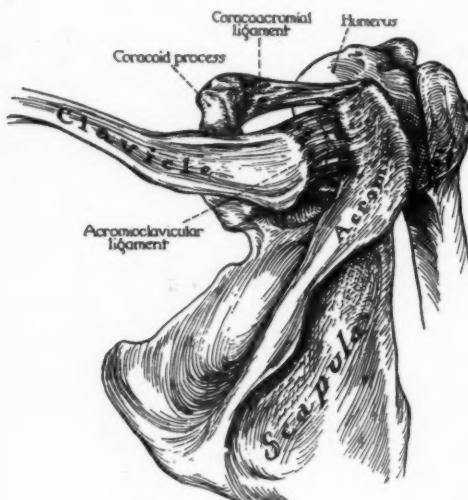
The conoid and trapezoid ligaments take origin (Fig. 1) from the base and neck of the coracoid process respectively (Fig. 2). The coracoid tuberosity on the clavicle for these coraco-clavicular ligaments is directly superior to this portion of the coracoid (Fig. 3). It will be noted, when viewed from above, that the tip of the coracoid beak projects from one to two centimeters anterior to the clavicle. This operation, if carefully

done, reconstructs a ligament from the coracoid tuberosity of the clavicle to the base and neck of the coracoid, which is anatomically sound. A curved incision is made just below the middle of the clavicle sweeping laterally over the acromio-clavicular joint (Fig. 4). The periosteum is carefully raised from the clavicle about the coracoid tuberosity. The base and neck of the cora-

The patient is placed in a spica jacket previously prepared, with the arm abducted 90 degrees. These patients are usually able to return to work in ten to twelve weeks. Our first patient returned to college football, and still has perfect function.

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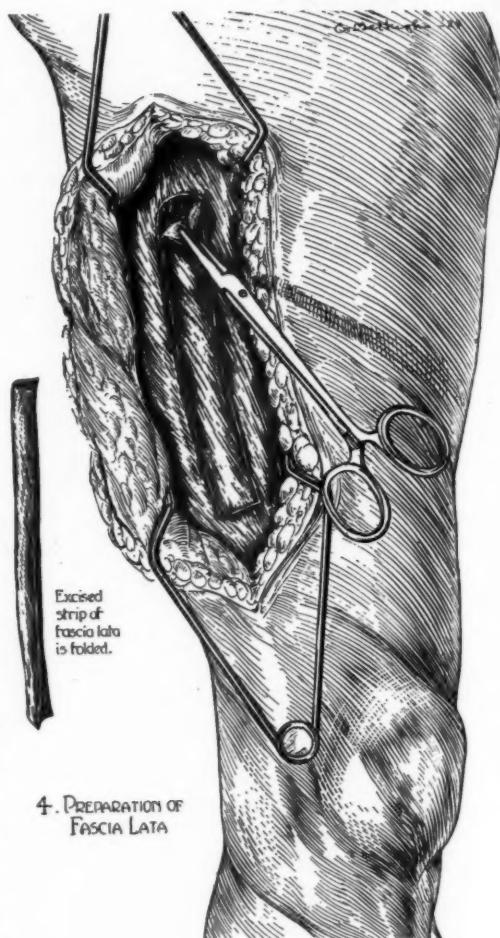
1. Bunnell, Sterling: Fascial graft for dislocations of



3. SUPERIOR VIEW OF SHOULDER REGION

coid process are exposed, subperiosteally so far as possible, cleaning it of remnants of the ligaments. Next a strip of fascia lata (Fig. 5) two centimeters in width and fourteen centimeters in length, is removed from the thigh. This is folded upon itself lengthwise and passed beneath the base of the coracoid, bringing one end over the clavicle subperiosteally at the site of the coracoid tuberosity (Fig. 6). While an assistant holds the dislocation reduced, the ends of the fascial band are overlapped and held taut until two mattress sutures of heavy silk are inserted through the fascial band.

Recently, since Krupp steel wire has proved completely satisfactory to us, we have passed a temporary suture of Krupp steel wire about the acromio-clavicular joint itself. The articular surfaces of the acromio-clavicular joint are not damaged, and the important gliding motion of this joint is restored after removal of the wire ten weeks later.

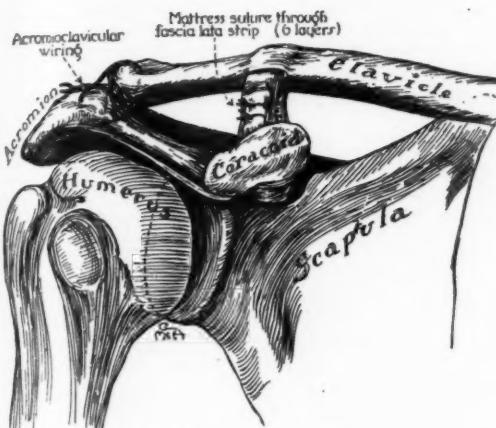


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# CASE REPORTS

## SIGMOIDAL FISTULA DISCHARGING THROUGH THE RIGHT THIGH\*

REPORT OF CASE

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A male, aged 34, presented himself early in July, 1927, with the complaint of a long standing ailment wherein fecal matter was discharged from a fistula in the region of the right trochanter. On my doubting this statement he said he could prove same by taking an enema. I told him I would call at his room at 6 o'clock if he would be prepared for the demonstration and advised him further to have some ordinary "bluing" such as is used in laundries, to use in the enema. The demonstration proved beyond a doubt the correctness of his statement.

The family history of the patient was negative except there was insanity recorded. He had had the usual children's diseases and at the age of fifteen had had typhoid fever, which he claims was the beginning of his present trouble. He states that ankylosis of the right hip, which he also suffers from, ensued during the active typhoid fever, which he claims started in June, 1908, and lasted until January, 1909. He had had influenza nine years before.

The patient's general condition was found to be as follows: Medium build. Temperature, pulse rate and respiration—normal. Weight—136 pounds. Blood pressure—systolic 106, diastolic 60. Heart and lungs normal. Chest expansion—two inches only. No râles. The mental condition of the young man was rather hazy. He appeared to be morose and it was rather difficult to get a full and detailed statement from him. He stated he had seen many physicians and had been diagnosed in various ways, the usual diagnosis being a primary tuberculous hip. Others again held that the typhoid fever had been the cause of the ankylosis and the fistula formation.

There are, as I recall, at least six or seven scars over the right hip, small of the back and outer right thigh region. Two or three of these were open and discharging at the time of his presentation.

The question at once arose as to where the fistula connected with the bowel and as to the method of procedure in order to determine its location.

Fig. 1 shows an ordinary barium enema and the right hip joint ankylosed.

Fig. 2 shows a streak of 15 per cent sodium iodide solution injected into the fistulous opening in the outer thigh, connecting through various ramifications with

some portion of the bowel. The picture shows the possibility that the fistula might be in the head of the colon, which would have simplified very materially the procedure.

The next step taken was that of a sigmoidoscopy in combination with injection of water into the sinus in the thigh. A bubbling was discovered 19 cm. in by means of the sigmoidoscope, which established beyond a doubt the connection with the bowel.

Figure 3 shows a rubber tube inserted the distance of 19 cm. Note the constriction of the tube near the anus, obtained by a tightly wound cord at the distance of 19 cm. from the tip of the tube. This gave the location of the fistula high enough to be reached by abdominal approach.

On July 11, 1924, the abdomen was opened under general anesthesia with the rectal tube in situ. A horse-shoe loop of the sigmoid bound down by inflammatory tissue was found at the tip of the tube. Extreme difficulty was encountered in trying to free the "loop" and bring it up. During the manipulation my finger was poked into the bowel at this point. Injection of water through the sinus in mid-thigh bubbled into the field of operation. The rectal tube was removed and about 2 inches of the lower sigmoid resected and a Murphy button inserted.

Figure 4. Shows a button *in situ* which did not pass for more than three weeks.

The results were fairly good. There was no discharge of any consequence through the sinus and fistulous openings although the patient felt uncomfortable in the region at times. There was no evidence of tuberculosis in the bowel at the time of abdominal section.

On August 16, a wide incision was made of the major tracts and curettage of same performed.

It appeared as though we had won the victory although no absolute diagnosis had been made as yet. The abdominal wound did not heal properly. A small fistula was discharging, particularly gas, at intervals. There was nothing in the patient's daily routine which would indicate a reason for this. The possibility of a partial non-union in the bowel on account of the poor healing quality of the sigmoid was attributed as a cause.

On November 21, the patient submitted to another abdominal incision in an attempt at a complete closure. The peritoneum at this time was found studded with tubercles which established the diagnosis beyond a doubt. However, the wound healed promptly and when the patient left the city there was only a small discharge present.

The patient was advised to take institutional treatments and from the last communication he was doing fairly well.

\*Read before the Minneapolis Surgical Society, Feb. 2, 1928.



Fig. 1

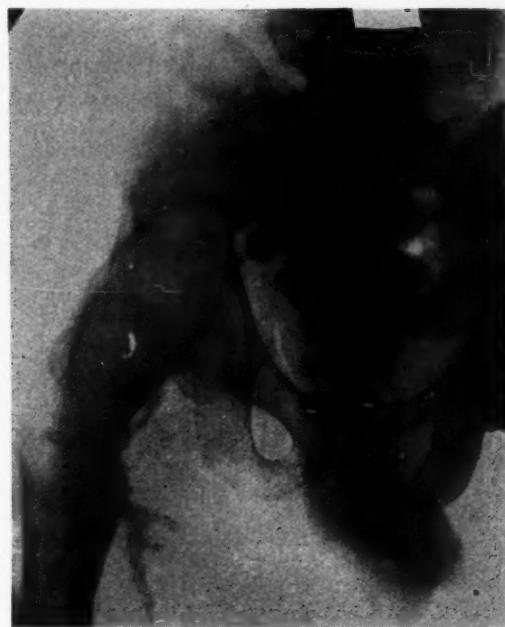


Fig. 2



Fig. 3



Fig. 4

## RENAL CALCULUS PYELONEPHRITIS\*

## REPORT OF CASE

LEO MURPHY, M.D.  
Minneapolis

The case is of interest because it illustrates the clinical similarity between right kidney pathology and gallbladder disease. Also it shows the very extensive damage to the kidney secondary to the obstructive action of a small cork type of calculus.

The patient was an obese female, aged 53 years. For brevity I shall present only positive points in the history and in the findings. I first saw her in November, 1926, in the hospital with signs and symptoms of chronic multiple arthritis which had been present for about one and one-half years. She remained in the hospital for one month at that time and had some improvement under treatment for arthritis. In stating her history

tachycardia. There was no urinary frequency or dysuria. The pain was severe and steady and radiated backward and upward rather than down the ureter. There was very definite tenderness over the gallbladder region and no jaundice. On the following morning the patient entered the hospital.

Urinalysis: Albumin was 2 plus; sp. gr. 1.015; pus cells—one plus.

Blood: Urea nitrogen 33.6 milligrams; sugar 0.136; creatinin 1.5; leukocytes 15,000.

Radiogram of the abdomen shows a very large right kidney with a renal calculus in the pelvis.

A cystoscopy was done by Dr. Theodore Sweetser. The bladder was normal except for a mild edema at the right ureteral meatus. Ureteral catheters passed easily but the right catheter did not quite reach the kidney. P. S. P. was normal from the left and no return in three quarters of an hour from the right kidney. The urine from the right contained pus and a pure culture of *B. coli*; the left, no pus or other



Fig. 1. Roentgenogram showing shadow suggesting urinary calculus.



Fig. 2. Ureterogram showing ureter dilated.

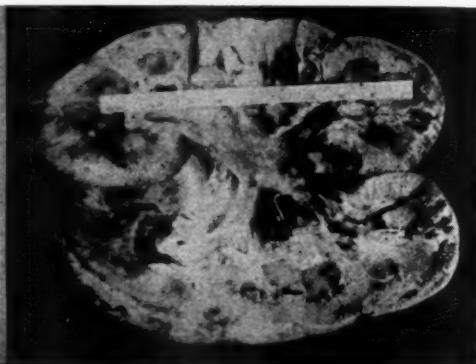


Fig. 3. Kidney removed at operation.

the patient intentionally concealed the information regarding attacks of right upper abdominal colic which dated back about twelve years. She had been examined here and elsewhere for these attacks and had been told that her gallbladder should be removed. Apparently very little attention was attracted to the right kidney at those examinations, although the patient herself felt that her trouble was not in the gallbladder. Her reason for concealing this information relative to her alleged gallbladder was because of fear of operation. During the month in the hospital in 1926 there were no symptoms suggesting pathology in the urinary tract and no investigation was made. Her urine was normal, blood sugar normal, hemoglobin 88, blood pressure—systolic 170, diastolic 110.

In 1927 the patient was at home and felt well except for arthritis and some right sided backache at intervals. I next saw her in October, 1927, in an attack of severe right upper abdominal colic with abdominal distress, fever, chill, nausea and vomiting, increased thirst and

abnormality and a negative culture. Sodium iodide injected into the right ureter showed the ureter to be dilated below the renal pelvis. The fluid did not go beyond the stone.

During the following week the patient generally improved. The urine still contained pus and the blood chemistry dropped to urea nitrogen 20.3 milligrams; creatinin 1.72; sugar 0.126; leukocytes 10,000. Another cystoscopy was done to determine the condition of the left kidney. This was found to be normal and a pyelogram of the left kidney revealed a slightly dilated pelvis with calices broader than normal. On the right side it was impossible to pass a number 9 silk catheter past the stone. Indigo carmine appeared normally on the left side and only a faint trace in twenty-five minutes on the right.

*Diagnosis:* Right renal calculus with marked pyelonephritis.

Exploration of the right kidney was advised. This was done through a Mayo lumbar incision and the right kidney was found to be studded with tiny ab-

\*Read before the Minneapolis Surgical Society, Feb. 2, 1928.

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scesses. The small stone could be felt at the uretero-pelvic junction. Nephrectomy was done with the removal of the upper part of the ureter. On examination of the kidney after removal it was found that the stone was missing. Therefore a catheter was passed down

the distal ureter and the stone was encountered in a lower part of the ureter. The stone was then milked upward and delivered.

The convalescence was uneventful and the patient has already shown a marked improvement in her arthritis.

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ERGOTOLE, EXTRACT OF ERGOT PURIFIED,  
ERGOTIN-MERCK, LIQUOR ERGOT-MUL-  
FORD, AND SECACORNIN OMITTED  
FROM N. N. R.

All of the ergot preparations included in New and Non-official Remedies, 1928, are watery extracts and as such, according to the current view, cannot contain much of the active alkaloids which are the important constituents of ergot when viewed from a clinical standpoint. With one exception, none is assayed by the U. S. P. method or any other method that will show the content of active alkaloids. The methods by which they are assayed show only, or mainly, the content of putrefactive amines, which have not proved desirable in obstetric work. The referee of the Council on Pharmacy and Chemistry for ergot preparations reported assays of the accepted brands not claiming assay by the official method (except Liquor Ergot-Mulford) which showed the preparations to contain less than 10 per cent of their claimed strength. In other words, they were found practically devoid of specific alkaloids. The Council voted to omit Ergotole, Extract of Ergot Purified, Ergotin-Merck, Liquor Ergot-Mulford, and Secacornin from New and Non-official Remedies. (Jour. A. M. A., May 4, 1929, p. 1521.)

EFFECTS OF CONTINUOUS USE OF ALLONAL  
AND AMYTAL

"Allonal," according to a report of the Council on Pharmacy and Chemistry (Jour. A. M. A., June 12, 1926, p. 1853), is a preparation containing a combination of allylisopropylbarbituric acid and amidopyrine mixed with free allisopropylbarbituric acid and an excess of amidopyrine. "Amytal" is stated to be iso-amyl-ethyl barbituric acid. The effects from the continuous use of either of these drugs in doses of two tablets daily cannot be stated accurately in a few words because the barbituric acid derivatives give rise to an extraordinary variety of symptoms under different conditions. It is possible that no ill effects would follow from such daily doses in a healthy adult in whom sleeplessness resulted solely from unusual cerebral activity, if the use were not too prolonged. At the other extreme, such doses taken continuously over a long period by an invalid suffering from a serious condition in which various other drugs were taken might lead eventually to the typical symptoms of barbital poisoning, with pneumonia and death. Neither Allonal nor Amytal stands accepted by the Council on Pharmacy and Chemistry. (Jour. A. M. A., May 25, 1929, p. 1783.)

## PRESIDENT'S LETTER

**T**HE salutary effect of the Basic Science Law and the repeal of the Massage Act by the last session of the Legislature is evidently to bring about unlooked for results. The new educational and training requirements for the auxiliary remedial branches are to be met by appropriately specialized educational facilities.

In Europe, particularly in the Scandinavian countries, the systematic and scientific teaching of massage has reached a high stage of development. Careful investigation, however, has revealed the fact that in the United States there is no school in which massage and mechanotherapy are systematically taught under medical supervision. Short courses are, nevertheless, given in some institutions, but no well defined, coöordinated and unified curriculum, of adequate scope, is in force in any institution in this country.

It is gratifying to learn that a movement has been inaugurated to establish a school of massage, mechanotherapy and physiotherapy in the Twin Cities. Dr. Arvid Reuter-dahl, the eminent scientist, has associated with him Mr. T. M. Larson, a graduate masseur. Dr. Simon and Dr. Harrington, Health Commissioners of St. Paul and Minneapolis, respectively, are also interested. There is to be selected an Advisory Board of medical men to have general supervision of the conduct of the school. Doubtless Our Association and the medical profession in general will welcome the advent of such a school. It is intended that the institution shall be a model and set the standard for all future schools of this type in the United States. Carefully balanced curricula have been prepared for the new school, which will be known as the "Basic Science Institute and Sanatorium."

Entrance requirements include graduation from an accredited high school, certification of good character and personality, and possession on the part of the applicant of a vigorous and healthy body. Among the enumerated purposes of the courses are:

1. To provide sufficient cultural background to instill respect for knowledge and its adequate safeguarding.
2. To inculcate disapproval and disrespect for fraud and charlatanism.
3. To foster the spirit of service to mankind.
4. To train the student in courteous and ethical behavior.

Each course involves a period of two years. One school year consists of three quarters. A school week is composed of thirty hours of coöordinated theory and practice. Thus a complete course consists of 2,160 hours.

That thorough training is an ideal of the new institution is evident from the following synopsis of its curricula:

### COURSE IN MASSAGE AND MECHANOTHERAPY

#### First Year

1st quarter: Outline of science, fallacies and frauds, anatomy, physiology, physiology of massage, kinesiology, dermatology, first aid.

2nd quarter: Outline of science, anatomy, physiology, dermatology, orthopedics, histology, massage technic, corrective exercises.

3rd quarter: Same as second quarter.

#### Second year

1st quarter: Psychology, medical ethics, pathology, massage technic, mechanotherapy, corrective exercises, dietetics.

2nd quarter: Psychology, pathology, massage technic, mechanotherapy, corrective exercises.

3rd quarter: Pathology, massage technic, mechanotherapy, hydrotherapy, thermotherapy.

### COURSE IN PHYSIOTHERAPY

#### First Year

Same as first year in massage and mechanotherapy.

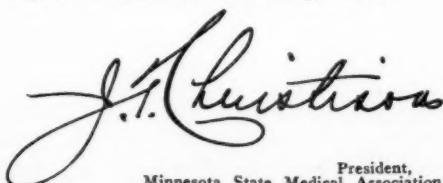
#### Second Year

1st quarter: Psychology, medical ethics, pathology, corrective exercises, dietetics, principles of apparatus, physics, chemistry, elements of electricity.

2nd quarter: Psychology, pathology, mechanotherapy, radiology, actinotherapy, electrotherapy, hydrotherapy.

3rd quarter: Pathology, surgical observation, mechanotherapy, radiology, actinotherapy, electrotherapy, hydrotherapy, thermotherapy.

All medical subjects will be taught by duly qualified members of the medical profession. The work will be under the supervision of the State Board of Medical Examiners, and treatments at the Sanatorium will be subject to medical advice and supervision.



President,  
Minnesota State Medical Association.

# EDITORIAL

## MINNESOTA MEDICINE

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Vol. XII July, 1929 No. 7

### PRE-SCHOOL EXAMINATION

Three years ago certain physicians in Saint Paul, numbering for the most part the pediatricians of the city, were prevailed upon to examine children of pre-school age at the special spring and fall clinics conducted at the various city schools. They have continued to conduct the examinations free of charge until this spring.

There has been a growing feeling among physicians in general that they are called upon to furnish free services for a variety of causes, which, although very worthy, should not be classed as charity. There has been an increased realization of the importance of periodic health examinations and the child of pre-school age

doubtless should have a periodic examination as well as the infant or child of school age. It was doubtless to further the idea in the lay mind that these examinations were conducted gratis.

A committee of the local medical society recently investigated the matter and recommended that pre-school examinations in the future in Saint Paul be conducted by private physicians except in such instances where parents are not able to afford such services, in which case the children should be taken to the free dispensaries or Baby Welfare Clinic.

Such action we believe to be fully justified. In the first place examinations of children in large groups at school buildings are likely to be less satisfactory to physician and parent alike as compared with those conducted in the office or dispensary. Secondly, there is no good reason why a physician should donate his services to individuals who can afford to pay a fee for such an examination.

### HEALTH MEETINGS COMING TO MINNEAPOLIS

The week of September 30 to October 5 will be a notable one when ten public health organizations meet in Minneapolis. The occasion of the meeting of several national health associations is to be utilized for the simultaneous assembly of a number of state organizations devoted to public health activities.

The Minneapolis Civic and Commerce Association has made it possible for all ten associations to meet in the Minneapolis Auditorium. The meetings are being backed by state, county and municipal agencies devoted to the various phases of public health. Education in health matters is the keynote of the conference in which the laity as well as physicians, dentists, public health officers, and nurses will all take part.

An executive committee and the various subcommittees have been appointed with Dr. Richard Olding Beard as executive secretary. Committee members consist of individuals interested in some phase of public health activities both local and statewide.

The associations which will meet at this time are:

The American Public Health Association, The American Child Health Association, The International Society of Medical Health Officers, The American Association of School Physicians, The American Social Hygiene Association, The Conference of State Sanitary Engineers, The State Sanitary Conference, The Minnesota State Public Health Association, The Minnesota State Organization for Public Health Nursing, The Northwest Conference for Child Health and Parent Education, with an Educational Public Health Exhibit for the benefit of the people at large.

#### "TOMMY" LEE

In commemoration of the completion of thirty-seven years on the medical faculty of the University of Minnesota a dinner was given May 18 at the Minneapolis club by a number of medical friends of Dr. Thomas G. Lee.

Dr. Lee is the last member of the original medical faculty to retire from active teaching and his retirement constitutes in a way a milestone in the history of medical education in the state. In 1892 the Medical School of the University of Minnesota was organized. The two existing medical schools in the state, one in Saint Paul, known as the Saint Paul Medical College, and the other carrying on its activities at St. Barnabas Hospital in Minneapolis, surrendered their charters at that time in favor of the newly instituted school at the University.

When Dr. Lee came to Minneapolis from the University of Pennsylvania in 1892 the present pharmacy building was under construction to house the medical, pharmacy and dental schools. The medical course at that time was a two year course. From time to time the course was lengthened until the present seven year course was adopted.

As many of our readers know, Dr. Lee's special interest was embryology. It was he who was instrumental in gathering a large portion of the specimens for the present embryological museum at the medical school. Thousands of physicians practising today took his course and will regret to hear of his retirement. The doctor will move to his home at Babson Park, Florida.

#### OBITUARY

##### J. E. Le Clerc 1868-1929

Dr. J. E. Le Clerc of Le Sueur, Minnesota, was born in Quebec, Canada, March 21, 1868. He graduated from Laval University, Quebec, in 1893, and first located in Duluth. In 1894 Dr. Le Clerc married Adele Fortier of Quebec and in 1896 they moved to Le Sueur. For twenty-five years Dr. Le Clerc was secretary of the Nicollet-LeSueur County Medical Society. His death occurred May 6, 1929, from pneumonia.

Dr. Le Clerc had the distinction of being the first to volunteer his services from Le Sueur at the beginning of our participation in the World War. While in service he was promoted to the rank of Captain and later received the commission of Major.

After the war Dr. Le Clerc became much interested in the American Legion and was known as the father of the Legion in Le Sueur. At the services held in honor of their much beloved former commander Legion members from neighboring posts took part in the ceremonies and shared in the expression of esteem in which the doctor was held by all who knew him. Besides being an active physician Dr. Le Clerc took a great interest in medical society affairs and local civic activities. He is survived by his wife, his aged father in Montreal, two sister and two brothers.

##### George O. Welch 1860-1929

State of Minnesota Department of Public Institutions  
St. Paul, June 5, 1929.

In the death of Dr. G. O. Welch, for more than 35 years superintendent of the State Hospital at Fergus Falls, Minnesota, the entire community has suffered an irreparable personal loss, and the State Board of Control and superintendents of state institutions have been deprived of one of their most genial, sympathetic and devoted friends and former associates.

Dr. Welch held first rank in his chosen profession. As a citizen he was patriotic and progressive and as superintendent of the Fergus Falls State Hospital he made an enviable record by his fairness, and his marked devotion to the needs of the patients. He was a valued citizen and friend. He gave unstintingly of his time and his talents to the professional side of his work, while he gave his whole heart and soul to the many and diverse personal phases of his contact with the patients under his care.

The State Board of Control wishes to record its heartfelt appreciation of the personal character, the fine qualities of mind and the loyal devotion to duty that marked Dr. Welch's entire career, and hereby gives official expression to such appreciation to be made a part of the Board's record and copies of the same to be sent to the family of the late superintendent.

Dated at St. Paul, Minnesota, this 5th day of June 1929.

State Board of Control,  
BLANCHE L. LADU, Chairman,  
JOHN COLEMAN  
C. J. SWENDESEN

## CONSULTATION BUREAU

W.M. A. O'BRIEN, M.D., *Director*  
 Minnesota State Medical Association  
 11 West Summit Avenue  
 Saint Paul, Minnesota

1. **Question.**—What is the classification of diseases of the heart, which is taught by the Department of Pathology at the University of Minnesota?

**Answer.**—Outline of Diseases of the Heart by E. T.

Bell, M.D.:

- I. Endocarditis
  - A. Rheumatic
    - 1. Acute
    - 2. Recurrent
    - 3. Old valve defect
  - B. Bacterial
    - 1. Acute
      - a. Primary
      - b. Secondary
    - 2. Subacute
      - a. On previously normal leaflet
      - b. On old rheumatic leaflets
  - C. Syphilitic
  - D. Senile or arteriosclerotic
- II. Diseases of the Myocardium
  - A. Acute Exudative Myocarditis
    - 1. Abscesses
    - 2. Infected mural thrombi
    - 3. Extension from pericarditis
  - B. The Toxic Myocardium
    - 1. Mild—mild infectious processes
    - 2. Severe—severe infectious processes (diphtheria)
  - C. The Hypertension Heart
  - D. Coronary Sclerosis
    - 1. With hypertrophy
      - a. Without congestive failure
      - b. With congestive failure
    - 2. Without hypertrophy
      - a. Without congestive failure
  - E. Right Heart Failure
  - F. Thyroid Heart
    - 1. Hyperthyroid
    - 2. Hypothyroid

### III. Diseases of the Pericardium

#### A. Acute

- 1. Fibrinous
- 2. Serous
- 3. Purulent

#### B. Chronic Adhesive

### IV. Congenital Heart

#### Common Clinical Diagnoses Pathological Findings

I. Chronic Myocarditis	Hypertension Heart Coronary Sclerosis Old Valve Defect Adherent Pericardium
II. Mitral Regurgitation	No Disease—Accidental Systolic murmur Hypertension Heart Bacterial Endocarditis Old Valve Defect Adherent Pericardium Coronary Sclerosis—congestive type
III. Aortic Regurgitation	Bacterial Endocarditis Old Valve Defect Luetic Aortitis Hypertension
IV. Chronic Interstitial Nephritis	Hypertension heart with congestive failure, edema and albuminuria

**Comment:** You will note that syphilis is included under endocarditis and not under myocarditis, because of the infrequent findings of spirochetes or syphilitic lesions in the muscle. Gumma may occur, but it is very uncommon. Right heart failure may be due to chronic lung disease; e.g., bronchial asthma, bronchiectasis, pulmonary fibrosis, and disease of the pulmonary arteries (Ayerza's disease). Hypothyroidism may produce a diffusely dilated heart (myxedema heart). Hyperthyroidism may cause cardiac changes, but no examples of uncomplicated deaths from cardiac failure have been found. The cardiac arrhythmias belong in clinical classifications. The classification of the American Heart Association was published by F. A. Willius, M.D., in MINNESOTA MEDICINE, June, 1929, pages 356 and 357.

2. **Question.**—Are there reliable firms which furnish radium emanation?

**Answer.**—The American Medical Association has a list of firms whose products are accepted by the Council. Radium emanation (radon) is supplied in a variety of containers for definite types of radiation (Beta, Gamma, or both). Radon may be ordered in glass, gold, or platinum seeds, now called implants, which may be buried in the tissues and allowed to remain. Both types of radiation are given in this way. Bare tubes in a capsule of heavy metals, brass, gold, silver, etc., supply Gamma radiation. They are sometimes buried in the tissues and removed at a later date. Glass bulbs or bombs with a thin screen are used for surface applications and supply both types of radiation. In ordering radon, it must be remembered that approximately four days after the gas has been measured, half the strength has disappeared. The material is inert at the end of one month. There may be leakage from rough handling, and all of these factors must be considered in estimating the dosage.

3. **Question.**—I have a patient, a fourteen year old girl, who has had a moderate elevation of temperature for the past three months. I have not been able to find any cause for the fever. Have you any suggestions?

**Answer.**—The diagnostic possibilities are as follows: Tularemia, undulant fever (Malta fever), localized purulent collections (pelvis, sinus, thorax, subdiaphragmatic, perinephritic, actinomycosis), suppurative pyelonephritis, endocarditis, osteomyelitis, septicemia, pyemia, tuberculosis, Hodgkin's disease, leukemia, malaria, and malingering. Go over the history again from an epidemiological viewpoint. Re-examine the patient very carefully with the idea of localizing a purulent collection. Most of the perinephritic abscesses are found by men who are constantly on the lookout for them. Send blood to the State Board of Health for test for tularemia and undulant fever. Examine the blood and urine at frequent intervals. If there are any palpable lymph nodes or tumor masses, excise for biopsy. A positive blood culture would be very helpful in making a diagnosis of septicemia or endocarditis. Radiographs of the sinuses, chest, and bones would also be helpful. If all of the examinations are negative, malingering should be considered, and a little detective work done.

 A PAGE FORUM OF THE   
COMMITTEE ON PUBLIC HEALTH EDUCATION**Medical Standards Maintenance Urged**

The following clipping from the St. Paul Pioneer Press will be of interest to physicians:

"Chicago, May 7.—While sympathizing with the movement toward reduced medical costs, Rev. A. M. Schwitalla, M.D., president of the Catholic Hospital Association, addressing the organization's annual convention here Monday, warned against any radical action which might result in lowering medical standards.

"The cry has gone abroad that sickness should be made much cheaper," he stated. "It is urged that the monetary value of the services of physicians must be standardized and if possible reduced. I am sympathetic with this movement. It contains elements of unquestioned good, but is it not possible to have the sick human being obscured by the dollar sign? Our chief concern should rather be to render increasing service, more scientific, more spiritual service, than to reduce the cost of treatment.

"In the midst of the discussion let us not lose sight of the fact that if hospital costs are diminished at the cost of hospital standards we are retrogressing instead of progressing and we are allowing purely secondary considerations to actuate us in the tremendously important work that is ours."

"The president said he approved a thorough study of financial problems of the hospital but asserted that the criterion of a good hospital must remain the professional, medical and nursing care given to sufferers.

"The laymen are assuming increased responsibilities for public and private health. Some of our public health workers are not physicians. The social worker, moreover, has brought a viewpoint into the hospitals which unquestionably is true, correct and fundamental.

"But in the midst of all this the function of the physician may readily be overshadowed and we may be taking out of the hands of a competent authority responsibilities which we are injudiciously placing in the hands of those who have not been adequately trained for the medical solution of the patient's problem. The physician's responsibility cannot be waived in view of the hospital's responsibility for the patient.

"Dr. Schwitalla asserted there is danger in fostering a non-medical attitude toward the sick. The physician's interest, he added, will tend to lag if he is in any way relieved of responsibility."

## MISCELLANEOUS

### THE STATE AUXILIARY\*

MRS. BEN F. DAVIS  
Duluth, Minnesota

Mr. Toastmaster, Ladies and Gentlemen:

Before I tell you about the Auxiliary, I feel I must express the gratitude of the Auxiliary to the Minnesota State Medical Association as a whole and especially to the executive officers of the Association for their untiring kindness and helpfulness. We are deeply grateful and I would be remiss in my duty to the Auxiliary if I did not at this time thank you most heartily for all that you have done for us.

There are many reasons for a Women's Auxiliary to the Medical Profession. The social side is a very pleasant consideration for through the activities of the Auxiliary there will be established a closer relationship and better understanding among the physicians' families. Though I do believe that the most important reason is the service which we can give to the public, as well as to the Profession, through learning something about the economic side of medicine.

It is a well-known fact that quacks and faddists are constantly seeking an opportunity to address Women's Clubs for the purpose of spreading their propaganda. There is hardly a Women's Club of any type in the Country which does not number in its membership a physician's wife. These members could offset the effects of such propaganda if they would exert themselves a little to learn the professional viewpoint. We urge our physicians' wives to accept places on the Health Committees of their various club affiliations and see to it that the right kind of Health Programs are in their Year Books. By these club contacts much good can be accomplished.

The function of the Women's Auxiliary is to cooperate with and support in every way the State Medical Association. Its aims are our aims and anything that we can do to enhance its interests will redound to our credit. In order to be most efficient we must increase and perfect our organization. The total membership in Minnesota is 766. We are proud to say that 239 new members have joined since last June. There are thirteen counties organized and others in process of organization, leaving twenty-five counties which remain to be organized. It is hoped that with your cooperation these counties may be brought into the Association this coming year.

Those of you who have Auxiliaries in your town must admit that you know more doctors and their wives as a result and that you know them better.

What good is there to all this? Much.

To prove this point I shall tell you a few things that doctors' wives organized into Auxiliaries in Minnesota have accomplished.

They are given the credit for a jump in attendance at the State and County meetings.

They helped materially in the passage of the Medical

Practice Acts. This does not mean that they interfere in politics. It means that they are intelligently informed and can inform others.

They solicited Hygeia subscriptions for schools and libraries.

They sponsored a fourteen day Health Trail in Duluth during which sixty-one public meetings were addressed by physicians, health talks were given over the radio and interest in the matter of health was further aroused by means of an Essay Contest, a Poster Contest and a Health Personality Contest.

They coöperated with the Public Health Committee of the State Medical Association in its campaign of Education.

They donated to the Community Fund.

They also donated to the Michael Dowling School.

Loans have been made to the families of needy physicians.

The local auxiliary made gowns and bed-jackets for tuberculosis hospitals; made surgical dressings and aprons for hospitals; coöperated with the county nurses; provided books and toys for children's wards and furnished rooms and wards in the hospitals. They also made layettes for needy mothers.

They established and operated a nurses' loan fund scholarship and scholarships for medical students.

They have collected historical data for the State Society.

The Auxiliary sponsored a tea shop at the meeting of the American Medical Association for the convenience of those attending the convention.

The Auxiliary has, in my mind, proved its worth. It is here! Let us take advantage of it and, in helping it, help ourselves.

### THE NEW HEALTH OPPORTUNITY

The people of Minnesota, whether of professional or of lay following, have never had such a baptism of public health as they will receive in the week beginning September 30, 1929. And it is fair to believe that they are ready for its coming. It is not a matter of revival. It is a new awakening into a consciousness of the value of human health. We believe the public mind is ready for the gospel it will have a chance to hear. The soil has been well prepared of late for the sowing. Medical and public health agencies have been coöperating with each other, in the recent past, in a new willingness—one might well say a new enthusiasm—to carry health information directly to the people.

It is thirty years since the American Public Health Association held its annual meeting in this State. In that day it was the only notable organization of its type. Since then the whole significance and appreciation of health work has been changed. Public health agencies and institutions have multiplied. Research work has developed in the public health field. The recognition of the specific causes of disease has wonderfully advanced. Prevention has become possible, and what is of equal moment is that its possibilities have won appreciation in the intelligence of the people. They are demanding, not merely to be saved from the

\*Address at the Annual Banquet of the Minnesota State Medical Association, St. Paul, May 14, 1929.

consequences of disease, to be cured of their inherited and acquired ills—but in a word, *to be well*. The conception of positive health is of recent birth, but of rapid development.

The coming Health Meetings should do much for the Twin Cities, for Minnesota and the entire Northwest. The message to the new health Garcia needs but to be started on its way. It travels fast in these days. The mechanism of publicity requires but to be put in motion.

RICHARD OLDRING BEARD, M.D.  
Executive Secretary of the Local Committee.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### SYMPOSIUM ON PHYSIOLOGY AND BIOCHEMISTRY

The University of Minnesota, through its Medical School and the Mayo Foundation, will conduct a program of Physiology and Biochemistry between *July 15 and August 15, 1929*.

The following foreign scholars will be present:

Prof. M. von Frey, Professor of Physiology and Director of the Physiological Institute, Wurzburg, Germany. His work on the physiology of the special senses is internationally recognized.

Prof. Otto Meyerhof, of the Kaiser-Wilhelm Institute for Biology, Berlin, Germany. Dr. Meyerhof is noted in the field of General Physiology and received (in company with Hill of London) the Nobel Prize for his work on muscle.

Prof. T. Thunberg of the University of Lund, Sweden, investigator of vital oxidation phenomena, artificial respiration and metabolism. He will lecture on the mechanism of biological oxidation.

Prof. G. Anrep, Lecturer in Physiology, Cambridge, England. Dr. Anrep was associated with Prof. Pavlov in Petrograd for several years and will lecture on Conditioned Reflexes.

Prof. E. Laquer, Director of the Pharmaco-therapeutic Laboratory, University of Amsterdam, Holland. His researches have been on Sex Hormones and related problems.

Prof. Waldschmidt-Leitz, German Technical High School, Prague, Czecho-Slovakia. Until recently he was an associate of Prof. Willstötter in Munich and his field in Enzyme Chemistry.

Each guest scientist will deliver several lectures in English on subjects of his choice and in the field of his special research. Part of the lectures will be held in Rochester, Minn. Each lecturer will conduct one or more weekly seminars and have an office where he will be available for consultation. It is expected that several physiologists and biochemists of this country will also participate by giving lectures and conducting seminars. Detailed program will be issued later.

No fees will be charged. Credit for attendance by graduate students of this or other universities will be at the discretion of their advisors.

*Staff members and students of medical and agricultural schools, physicians, biologists, chemists and all others interested in Physiology and Biochemistry are invited.*

Board and lodging at moderate rates will be available. Recreational facilities are abundant in Minneapolis and vicinity. The summer climate is delightful. Bring your automobiles.

This gathering of foreign scholars is made possible by the first American meeting of the International Physiological Congress, in Boston, August 19-23. After the Symposium in Minneapolis, staff and visitors will go on to Boston for the Congress.

GEORGE FAHR,  
E. P. LYON,  
J. F. McCLENDON,  
F. H. Scott, Committee.

### REDWOOD-BROWN COUNTY MEDICAL SOCIETY

The annual meeting of the Redwood-Brown County Medical Society was held at Turner Hall, New Ulm, May 22. Twenty-one physicians and four ladies were present. After the banquet at 6:30 p. m. the following program was carried out, presided over by the president, Dr. Geo. Weiser:

1. "Local Anesthesia in Fractures," Dr. Carl O. Rice, Minneapolis.

2. "Quacks in Minnesota," F. Manley Brist, Investigating Attorney for the Minnesota State Board of Medical Examiners.

The secretary read his report of our last annual meeting held June 15, 1928, as well as minutes of special meetings held during the past year, and also the treasurer's report, all of which were adopted as read.

The following officers were elected for the ensuing year:

President, Dr. L. A. Fritchie, New Ulm;  
Vice President, Dr. J. W. B. Wellcome, Sleepy Eye;  
Secretary-Treasurer, Dr. Wm. A. Meierding, New Ulm.

Delegate to the 1930 State Convention, Dr. Geo. B. Weiser, New Ulm; alternate delegate, Dr. C. Saffert, New Ulm; censor (3 years), Dr. J. C. Rothenburg, Springfield.

The Publicity Committee, consisting of Drs. Weiser, Kiefer and Rothenburg, as well as the Committee on Public Policy and Legislation, consisting of Drs. Rothenburg and Hammermeister, and also the Committee on Maternal and Infant Hygiene, consisting of Drs. Weiser and Jamieson, were left unchanged. As no outside bids were received the president announced that our next annual meeting will again be held in New Ulm.

Dr. Merlyn J. Lindahl of Winthrop was elected to membership.

The meeting adjourned.

WM. A. MEIERDING, M.D.,  
Secretary.

## OF GENERAL INTEREST

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Dr. Henry E. Michelson of Minneapolis has returned from a trip to Europe.

A son, William Worrell, was born to Dr. and Mrs. John Berkman, Rochester, Minnesota, Thursday, May 30.

Dr. C. W. Rucker, formerly of the Mayo Clinic, Rochester, has announced the opening of an office at 910 Donaldson Building, Minneapolis.

Dr. H. W. Grant, Saint Paul, has given up his office at 339 Lowry Medical Arts Building, and has joined the Miller Clinic of Saint Paul.

Dr. and Mrs. Frederick A. K. Schaaf of Minneapolis will sail July 19 for Europe, where they will spend the summer traveling in Germany, France, Spain and Italy.

Dr. E. C. Maeder has become associated in the practice of obstetrics and gynecology with Dr. T. W. Weum of Minneapolis at 1011 Medical Arts (Yeates) Building.

Dr. J. J. Heimark has moved from Blue Earth to Fairmont, Minnesota, where he is associated in practice with Drs. Miller, Blanchard and Gardner in the new hospital and clinic building.

Word has been received from Dr. M. R. McQuigan, formerly of the Mayo Clinic, Rochester, of the opening of an office for the practice of medicine at 1050-1051 Fisher Building, Detroit, Michigan.

Dr. F. H. Magney of Duluth was elected chief of the medical staff of St. Luke's Hospital, Duluth, at the annual meeting held recently, to succeed Dr. D. L. Tilderquist.

Dr. W. J. Marcley of Minneapolis was one of forty men honored at the Atlantic City meeting of the National Tuberculosis Association as founders of the Association in 1904.

Dr. A. R. Anderson, formerly of the Mayo Clinic, Rochester, has been installed as dean of the New York Post-Graduate Medical School, according to an announcement received from New York City.

Dr. and Mrs. F. G. Benn of Minneapolis with their son, Howard Benn, are spending the summer in Europe. They plan to spend the greater part of the time in Vienna and will return some time in September.

Major Henry F. Lincoln, chief of the surgical staff of the Fort Snelling medical corps, will be transferred September 1 to Fort Clark, Texas, a cavalry post. He will hold a position at Fort Clark similar to that at Fort Snelling.

Dr. and Mrs. C. C. Chatterton of Saint Paul, with their two children, Laura and William, have sailed for Europe. Dr. Chatterton will attend a joint meeting of the American and British orthopedic societies in London, England.

Dr. P. J. Hiniker of Hastings has moved to Le Sueur

to assume the practice left vacant by the death of Dr. J. E. Le Clerc. Dr. Hiniker practised for two years in Dakota after finishing his internship at St. Joseph's Hospital, Saint Paul.

Miss Anne Swanson, daughter of Mr. and Mrs. H. Hendrickson of Deerwood, and Dr. Gilbert John Leonard of Saint Paul were married in Saint Paul in June. Dr. and Mrs. Leonard will be at home after August 1 at 1640 Randolph Street, Saint Paul.

Dr. A. J. Chesley of Minneapolis, executive officer of the Minnesota State Board of Health, was re-elected secretary-treasurer of the State and Provincial Health Authorities of North America at the forty-fourth annual conference of health officers held in Washington, D. C.

Fewer cases of tuberculosis in children exist in Minnesota than in any other section of the United States or Canada, according to a report given by Dr. E. P. Fenger of Glen Lake Sanatorium at the recent meeting of the National Tuberculosis Association held in Atlantic City.

With the recent celebration of the seventy-fifth anniversary of the founding of Rochester, Minnesota, the fact was brought to light that Rochester has the oldest practising physician in the world, namely, Dr. W. A. Allen. Dr. Allen is 94 years old and still sees his patients daily, driving his own car to visit them.

Mrs. E. M. Hammes of Saint Paul is the newly elected president of the Ramsey County Medical Society auxiliary. Other officers elected are: Mrs. E. C. Gager, vice president; Mrs. A. M. Johnson, recording secretary; Mrs. Karl Dedolph, corresponding secretary; Mrs. Paul Kelly, treasurer; and Mrs. E. A. Meyering, auditor.

The marriage of Miss Ruth Cantillon, daughter of Mr. E. Cantillon of Los Angeles, California, to Dr. Douglas Parry Head, son of Dr. and Mrs. George Douglas Head of Minneapolis, was solemnized at the home of Mr. and Mrs. E. J. McFarland, Minneapolis, June 18. Dr. and Mrs. Head will make their home in Minneapolis.

In recognition of the fellowship existing between English and American surgeons and to promote better international relationships between the nations, the University of Manchester, England, will confer the honorary degree of doctor of laws on Dr. William J. Mayo and Dr. Charles H. Mayo, July 22. Dr. William Worrell Mayo, father of the two brothers, attended the University of Manchester.

Announcement has been made of the engagement of Miss Lola Labowitz of Minneapolis to Dr. Paul H. Guttmann of the University of Minnesota teaching staff. Dr. Guttmann is doing research work and teaching in the department of pathology under a Mayo fellowship awarded him upon graduation from Washington University, St. Louis, Missouri.

A farewell dinner attended by one hundred and fifteen members of the faculty of the Mayo Clinic and Foundation was given Dr. Russell M. Wilder April 25,

on the occasion of his leaving Rochester to accept the chair of medicine at the University of Chicago. Dr. Wilder, whose father is a well known ophthalmologist in Chicago, graduated from Rush Medical College in 1912. Before his graduation he did some research work on typhus fever in Mexico City in conjunction with Dr. H. T. Ricketts, who lost his life as a result of the work. Following service in the medical corps during the World War Dr. Wilder went to Rochester, where he devoted his attention to the subject of diabetes. His work in connection with dietary treatment of the disease and later with the use of insulin led to his recognition as an authority on the subject. Dr. Wilder returns to Chicago to head the department of medicine at his alma mater, as Rush has become associated with the University of Chicago.

#### THE SAMUEL GROSS PRIZE

The Philadelphia Academy of Surgery announces The Samuel D. Gross Prize of \$1,500.00. Essays will be received in competition for the prize until January 1, 1930.

The conditions are that the prize "shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in Surgical Pathology or Surgical Practice founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the competitor who receives the prize shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery, and that on the title page it shall be stated that to the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery.

The essay, which must be written by a single author in the English language, should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 19 S. 22d St., Philadelphia," on or before January 1, 1930.

Each essay must be typewritten, distinguished by a motto, and accompanied by a sealed envelope bearing the same motto, containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay.

The Committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year.

The Committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

WILLIAM J. TAYLOR, M.D.  
JOHN H. JOPSON, M.D.,  
EDWARD B. HODGE, M.D.,  
*Trustees.*

## NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

### ABBOTT LABORATORIES

Bismarsen

CIBA CO., INC.

Digifoline-Ciba

Digifoline-Ciba Liquid

Ampules Digifoline-Ciba Solution, 1 c.c.

Ampules Digifoline-Ciba Solution, 5 c.c.

Tablets Digifoline-Ciba

Isarol-Ciba

### DESELL LABORATORIES

Petrolagar with Milk of Magnesia

PARKE, DAVIS & CO.

Diphtheria Toxoid

G. D. SEARLE & CO.

Sulpharsphenamine-Searle, 0.1 Gm. Ampules

Sulpharsphenamine-Searle, 0.2 Gm. Ampules

Sulpharsphenamine-Searle, 0.3 Gm. Ampules

E. R. SQUIBB & SONS

Insulin-Squibb, 80 units, 10 c.c.

SWAN-MYERS CO.

Canada Blue Grass Concentrated Extract-Swan-Myers.

WINTHROP CHEMICAL CO., INC.

Tablets Theocin Soluble, 2½ grains

### TRUTH ABOUT MEDICINES

*Lenigallol.*—Triacetylpyrogallol.—Lenigallol is said to be non-poisonous and non-irritating, but it produces a mild and painless corrosive effect by the gradual liberation of pyrogallol. It is used as a substitute for pyrogallol in psoriasis, lupus, acute and subacute eczema of children and other skin diseases. E. Bilhuber, Inc., New York.

*Solution Bismuth Sodium Tartrate-Searle, 1.5 per cent.*—An aqueous solution containing bismuth sodium tartrate-Searle (Jour. A. M. A., June 30, 1928, p. 2103) 0.015 Gm., benzyl alcohol 0.02 Gm., and sucrose 0.25 Gm. in one c.c. G. D. Searle & Co., Chicago. (Jour. A. M. A., April 6, 1929, p. 1181.)

*Magnesia-Mineral Oil (25) Haley.*—A mixture composed of liquid petrolatum, U. S. P., 1 part by volume; magnesia magma, U. S. P., 3 parts by volume. It is used as a lubricant in the intestinal tract for promoting evacuation of the bowel and as an antacid for the gastro-intestinal canal. The Haley M-O Co., Inc., Geneva, N. Y.

*Sulpharsphenamine-Searle.*—A brand of sulpharsphenamine-N.N.R. (New and Non-official Remedies, 1928, p. 81). It is supplied in 0.4 Gm., 0.5 Gm. and 0.6 Gm. ampules. G. D. Searle & Co., Chicago.

*Diphtheria Toxin-Antitoxin Mixture (Diphtheria Prophylactic).*—A diphtheria toxin-antitoxin mixture (New and Non-official Remedies, 1928, p. 366), each c.c. representing 0.1 L+ dose of diphtheria toxin neu-

tralized with the required amount of antitoxin. It is marketed in packages of three 1 c.c. vials, in packages of one 15 c.c. vial, in packages of one 30 c.c. vial, and in packages of thirty 1 c.c. vials. National Drug Co., Philadelphia. (Jour. A. M. A., April 20, 1929, p. 1349.)

*Sulpharsphenamine-Squibb, 0.9 Gm. Ampules.*—Each ampule contains sulpharsphenamine-Squibb (New and Non-official Remedies, 1928, p. 84) 0.9 Gm. E. R. Squibb & Sons, New York. (Jour. A. M. A., January 26, 1929, p. 313.)

*Dial-Ciba.—Diallylbarbituric acid.*—Dial-Ciba differs from barbital (diethylbarbituric acid) in that both of the ethyl groups of the latter are replaced by allyl groups. The actions and uses of Dial-Ciba are essentially similar to those of barbital, but Dial-Ciba is more active than barbital and it is used in correspondingly smaller doses. Fractional doses are used as a sedative and larger doses as a hypnotic. The hypnotic action is induced within one-half to one hour. As a sedative the dosage is 0.02 to 0.04 Gm. two or three times daily; as a hypnotic 0.1 to 0.3 Gm. one-half to one hour before sleep is desired. The product is supplied in powder, in Tablets Dial-Ciba, 0.1 Gm., and as Elixir Dial-Ciba containing 0.05 Gm. per 4 c.c. Ciba Co., Inc., New York. (Jour. A. M. A., March 23, 1929, p. 983.)

*Tablets Theocin Soluble, 2½ grains.*—Each tablet contains 2½ grains of theocin soluble, formerly called theocin sodium acetate (New and Non-official Remedies, 1928, p. 424). Winthrop Chemical Co., Inc., New York.

*Perfringens Antitoxin.*—*B. Welchii Antoxin.*—*Anti-Gas Gangrene Serum.*—An anaerobic antitoxin (New and Non-official Remedies, 1928, p. 351), prepared by immunizing horses with gradually increasing doses of the toxin of *B. welchii*. The finished product is tested on pigeons by determining the minimum amount necessary to neutralize the M.L.D. of *B. welchii* toxin, the potency being expressed in units. The product is marketed in 100 c.c. bottles of unconcentrated serum containing at least one unit per c.c.; in 50 c.c. bottles of unconcentrated serum containing at least two units per c.c.; and in 20 c.c. syringes of concentrated serum containing at least five units per c.c. H. K. Mulford Co., Philadelphia.

*Tetanus-Perfringens Antitoxin Refined and Concentrated-P. D. & Co.*—An anaerobic antitoxin (New and Non-official Remedies, 1928, p. 351), prepared from the toxins of *B. welchii* and *B. tetani* by immunizing horses with repeated, gradually increasing doses of tetanus toxin and perfringens (*B. welchii*) toxins until samples from treated animals show one unit or more of tetanus antitoxin per c.c. and one unit or more of perfringens antitoxin per c.c. In addition to use in the treatment of gas gangrene, this product is proposed for use as a prophylactic in conditions such as wounds or contusions in the abdominal tract and as curative in cases of acute peritonitis and obstruction of the small bowel. It is marketed in packages of one syringe containing 1,500 units of tetanus antitoxin and 10 units of perfringens antitoxin. Parke, Davis & Co., Detroit. (Jour. A. M. A., May 4, 1929, p. 1521.)

## PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

### Meeting of May 8, 1929

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, May 8, 1929. Dinner was served at 7 p. m. and the meeting was called to order at 8 p. m. by the President, Dr. C. N. McCloud. There were 41 members and 2 guests present.

Minutes of the April meeting were read and approved.

The scientific program was as follows:

Dr. H. L. ULRICH (Minneapolis) presented a patient with coarctation of the aorta, and afterward gave the following report of the case:

The patient is 32 years old, married, and has two children. His wife is healthy. He has had nervous symptoms for the last ten years, dyspnea and palpitation for six years, and tremors for one year. The last two years he has been under various physicians. He was sent into the University Hospital with a diagnosis of hyperthyroidism for operation. He was referred to the Medical Service for study. One of my associates had noticed a pulsating vessel on the thorax and the marked blood pressure so unusual in hyperthyroidism. When I was told about him I requested a brachial and popliteal pressure, thinking of coarctation of the aorta. The brachial pressure was 180/110 and the popliteal 120/80. Normally the blood pressures in the two extremities are equal or the lower extremity is the higher.

On physical examination he had a pansinusitis. He showed marked pulsation of the vessels of the neck and tortuosities and thrills. There were pulsating vessels running down the back along the margin of the scapula and one could palpate pulsations in the intercostal along the lower ribs. There was dullness under the sternum. There was a loud systolic murmur in the interscapular area, more marked on the left. He had a tremor of extended hands and a thrill over the thyroid and a basal rate of +43. Superficially he presented the picture of a case of thyrotoxicosis.

One can make a diagnosis of coarctation by feeling of the radial and femoral at the same time. The femoral will have a very weak impulse compared with the radial. Furthermore, by attempting to find pulsation in the abdominal aorta it will be absent or very feeble; thereby placing the obstruction in the thorax.

This is the first case of this kind that I have seen in my medical experience. It has been reported about 200 times at postmortems. Clinically it has been reported 78 times and corroborated by postmortems 21 times. (Ref.: Blackford: Coarctation of the Aorta. Arch. Int. Med., May, 1928, Vol. 41, No. 5, p. 702.)

We tried to see the narrowing of the arch under the fluoroscope but failed. A mass was seen under the sternum which pulsated. The question of a substernal

thyroid or dilated vessel off the arch was not determined. X-ray plates were shown which showed the shadow under the sternum. The heart was within normal limits in size, shape, and position. Attention was called to the serrated appearance of the lower borders of the ribs on both sides. This irregularity of the borders is a pathognomonic sign in roentgenology for coarctation. It is probably brought about by the movement of tortuous intercostal vessels. Several plates of the thoracic spine were shown. There was a distortion of the spine due to congenital deformities of the vertebrae. The third and fourth thoracic were fused and the seventh and eighth were very much deformed. There was some deformity of the ribs on the right side secondary to the deformity in the spine. Congenital defects are common with coarctation.

Every young individual with symptoms of hyperthyroidism and hypertension should be examined for this congenital defect. Just why they have symptoms of hyperthyroidism is difficult to say. Is it due to the increased blood supply? Several cases are mentioned in the literature with this syndrome. Resection of the thyroid has been done in several instances.

By coarctation is meant a congenital narrowing at the isthmus of the aorta. The isthmus is situated between the left subclavian and the insertion of the ductus arteriosus. The narrowing may be moderate or complete. To adjust for this obstruction the circulation seeks the collateral route. The commonest form is by way of the branch of the subclavian and intercostal, the flow of blood through the intercostals being toward the spine instead of away from it.

Blackford recently discusses this matter pretty fully, going into the embryological discussion, and concludes that it is a developmental defect. There are two types, the infantile and the adult. They are roughly differentiated anatomically by the site of the narrowing. In the infantile, the narrowing occurs between the left subclavian and insertion of the ductus arteriosus. In the adult, it is at the site of the ductus arteriosus.

In going over the postmortem findings Blackford divides these patients into four great groups, depending on how they die. There is one group that die of cardiac failure; a group that die from rupture of an aneurysm of the arch; a group that die from rupture of the cerebral vessels (there is tremendous pressure in the cerebral vessels); and a fourth group in which there are aplastic conditions in the aorta. There is also a fifth or miscellaneous group on which reports are not very clear. He reports 192 cases all told.

The treatment in this condition is simply rest and reduced effort. In this case Lugol's had been given without results. Rest reduced his metabolic rate to +4. Reduction of infections should also be done. This man now is working every day and feels extremely well.

They usually succumb about the 4th decade, although there have been cases reported dying older than that.

#### DISCUSSION

**DR. J. S. GILFILLAN** (St. Paul): I have very little to say about this condition. I have been on the look-

out for it for about 25 years but have never yet seen one. The signs here point to an obstruction of the aorta beyond the left subclavian artery. The tumor in the mediastinum may complicate things to a certain extent. The tumor evidently is situated on the arch of the aorta. This appears to be a goiter. I have never heard of the thyroid causing stenosis of this kind. The patient presents the typical signs of coarctation of the aorta and surely has a stenosis.

**DR. E. T. RICHARDS** (St. Paul): Dr. Ulrich is to be congratulated on making this diagnosis during life. It is an extremely rare condition—one of the rarest, in fact, that is ever encountered. This case presents beautifully all of the classical features although with the sustained hypertension I am somewhat surprised that he does not show a greater enlargement of the heart.

**DR. ULRICH** (in closing): If these patients have large hearts the enlargement is due to valvular defects. I just want to emphasize this one point about the thyroid. One should always differentiate this in young people. The man who looked at this boy with a thyroid and blood pressure was very suspicious that there was something more the matter with him. He had not been looking for coarctation the way I have for years. Way back in 1887 these differential conditions were discussed.

There is a mass under the sternum. Dr. Gilfillan mentions this point as casting some doubt on the diagnosis. He is quite right. There is one case in the literature in which a mass in the thorax reproduced collateral circulation through the neck vessels and lower thoracic aorta. However, in our case the tumor under the sternum is more to the left than to the right and above the aorta. It ought to obstruct the vessels coming off the aorta on the left. Our collateral circulation and pulsations are bilateral, and it is this reason, besides the absence of abdominal pulsation, which makes us think that there is obstruction in the thoracic aorta. Since there is obstruction, the most likely place would make it at some congenital site, namely, the isthmus.

**DR. J. M. ARMSTRONG** of the Historical Committee of the State Society showed several articles used by medical men in the early days of their practice, among them being a box of "eye-stones," the first clinical thermometer used in St. Paul, a mechanical phlebotomy knife, and he also showed a photograph of the first physician who came to St. Paul.

**DR. C. B. WRIGHT** (Minneapolis) showed a specimen from a case of aortic aneurysm which he had reported briefly at a previous meeting. Following is the complete case report:

The patient was 47 years old. His family history was negative. He had been married seventeen years and his wife is living and well. There are two children, fourteen and sixteen years of age, living and well. There was no history of venereal infection.

The patient had always been well until November,

1928, when he contracted a respiratory infection with fever and cough, for which he was in bed five days. Following this he had had some pain in his left side which he thought was pleurisy. With the exception of these five days he had been able to follow his occupation of handling an automatic riveting machine.

On February 2, 1929, while at work he was seized with an agonizing pain in the epigastrium which radiated to the right side. It was considered an acute gallbladder colic by the doctor who saw him at that time. Later the pain radiated to both sides and back. About one week later he lost his voice and had some cough with several slight hemoptyses. He came to the hospital February 25, 1929.

On examination his breathing was rapid, he was suffering extreme pain, which he said was now located over his left precordium. The left radial pulse could not be felt and there was marked decrease in the left carotid. There was marked precordial pulsation, more marked to the right of the sternum, visible from the second to the sixth interspace. There were signs of compressed lung over the right upper lobe. Litten's sign was very definite on the right side and absent on the left. There was marked lagging on deep breathing of the left costal margin. Fluoroscopic examination showed a large mediastinal tumor 10 cm. in diameter which pulsated. The left diaphragm was paralyzed and the heart was almost entirely on the right side, being markedly displaced with the mediastinum. The left vocal cord was paralyzed. The Wassermann was plus 4.

The striking points in this case are the sudden onset with agonizing abdominal pain simulating an acute abdominal condition, the pain after ten days shifting to the left precordium, the marked displacement of the mediastinum with impalpable radial and weak carotid pulse on the left side, the paralysis of the left vocal cord, and the paralysis of the left diaphragm shown clinically by the absence of Litten's sign and the lagging of the costal margin on the affected side on deep breathing.

The patient left the hospital on March 25, 1929, comparatively free from pain, although the physical signs were unchanged. On April 15 his pain returned, gradually becoming more severe, and on April 16 he died suddenly.

The postmortem findings by Dr. Lawrence Larson were as follows:

"There is a large aneurysm of the arch of the aorta measuring 17 x 15 x 12½ cm. It is formed mainly at the expense of the left lateral wall of the aorta where it has perforated into the left pleural cavity through an opening about 1 cm. in diameter. It projects into the left pleural cavity, almost reaching the right chest but not nearly so extensively as on the left. The content of the sac is made up of laminated thrombus, some areas being older than others. The thrombus extends proximally into the aorta, nearly reaching the aortic valve. The dilatation does not involve the root of the aorta, the aortic valves being apparently com-

petent. The aneurysm has eroded the anterior surface of the bodies of the vertebrae from the seventh to the tenth thoracic level. The intervertebral discs have for the most part remained unattacked."

The two things of unusual interest in this case are the sudden onset with epigastric pain radiating to the right side, simulating a gallbladder attack, and, second, the enormous size of the aneurysm.

DR. FREDERIC E. B. FOLEY (St. Paul) then read his inaugural thesis, entitled "New Methods for Exposure of the Kidney and for Nephropexy." Lantern slides were shown.

#### DISCUSSION

DR. OSCAR OWRE (Minneapolis): I have listened with a great deal of pleasure to Dr. Foley's presentation. I have reviewed the literature on exposure of the kidney quite thoroughly and feel very certain this is original. Dr. Foley has explained his method to me on one or two occasions and some ten days ago I exposed a tuberculous kidney in this manner and was very much surprised at the ease with which the kidney could be delivered. I am sure that this method of approach has tremendous advantages over the older technic. It seems to me that the real value of this is the fact that you can investigate the vascular pedicle and the pelvis with greater facility than with the old exposure.

As to fastening the kidney to the renal fossa, I can see how this method would be much more likely to succeed while others would fail. For years I have been astonished at the great number of kidneys that become loose after having been fastened up. Some years ago I saw a woman upon whom Dr. Frederic Treaves had done a double nephropexy and was very much surprised to find that both kidneys were down in the abdomen and I thought if he couldn't do it I could not expect to accomplish it. I feel quite sure that most of the kidneys fastened in the usual way, such as decortication, partial or full, and depending upon the capsule fastened to the rib, etc., etc., fail. I have become a pessimist on the advantages of nephropexy. Dr. Foley's method leaves the capsule intact and the kidney is fastened in the renal fossa against the clean muscles of the back. As I witnessed him do it, I think it ought to succeed, as all intervening fatty tissue is stripped away. I believe all of Dr. Foley's cases have stayed up; however, I do not feel that one can say that these kidneys will stay up indefinitely because not enough time has elapsed to be certain about it. Yet it appears to offer the best hope of success.

I want to congratulate and compliment Dr. Foley.

DR. H. B. ZIMMERMANN (St. Paul): I believe Dr. Foley's method of exposing the kidney is the best I have ever tried. There is one part of the technic that if Dr. Foley mentioned he did not bring out very clearly. Before the incision is made into the peri-renal fascia the peritoneum is pushed away from the transversalis fascia toward the midline, away from the anterior abdominal wall. This allows the peritoneum,

with its adherent fatty mass, to drop into the abdomen by gravity. From then on the intra-abdominal contents do not get in the way.

**DR. A. C. STRACHAUER** (Minneapolis): Nephropexy, some dozen or more years ago, fell into disrepute because of its very frequent and unnecessary performance for gastrointestinal conditions, principally Glenard's disease, which is, of course, never benefited thereby. A loose kidney is a common accompaniment of general viscerotaxis, and the fixation of such a kidney will not relieve the gastrointestinal symptoms of Glenard's disease. Intermittent hydronephrosis, distinct attacks of Dietl's crisis, call for the performance of nephropexy, and this operation when definitely indicated and properly performed has given as much satisfaction as any type of operation with which I am familiar.

The operation that Dr. Foley has described I am confident will give satisfaction, since it complies with the requirements of success for nephropexy, in that the kidney, without the interposition of fat, is fastened in direct contact to fascia and muscle. Following the technic of Israel, I have removed the offending perirenal fat and have fastened the completely decapsulated kidney to muscle and fascia, and the results have been eminently satisfactory.

**DR. A. E. BENJAMIN** (Minneapolis): There is one point in technic which I carried out a number of years ago in connection with this operation. That was, to decapsulate a portion of the kidney by dissecting the capsule from the center posterior line, making two flaps about 1.5 inches wide, dissecting one upward toward the upper pole and one downward toward the lower pole, and then putting each flap between the muscle fibres. The kidney would then come right in contact with the muscle tissue. The kidney would stay in place; none of them dropped. Of course, at that time we were operating more cases. Where there is a hydronephrosis from a kinked ureter and a dropped kidney I believe this operation is indicated.

**DR. FOLEY:** I have nothing more to add except to thank the men for their discussions. I am glad to know that some of the members have used this method and found it satisfactory.

As a result of the formal ballot, the following men were elected to membership in the Academy:

Honorary Membership (from Active): Dr. F. A. Dunsmoor and Dr. R. E. Farr, both of Minneapolis.

University: Dr. W. A. O'Brien.

Active: (Minneapolis) Drs. W. E. Camp, James Johnson, Martin Nordland, E. C. Robitshek, and A. A. Zierold. (St. Paul) Drs. Harold Hullsieck and George Ruhberg.

The meeting adjourned.

CARL B. DRAKE, M.D.  
Secretary.

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

## MEDICINE

### SUPERVISORS:

F. J. HIRSCHBOECK,  
205 W. 2nd STREET, DULUTH

THOMAS A. PEPPARD,  
LA SALLE BLDG., MINNEAPOLIS

UNDERLYING DISTURBANCES OF METABOLISM OF THE NERVOUS CHILD: H. C. Cameron (Brit. Med. Jour., Feb. 2, 1929, No. 3552). Metabolic processes in children are less stable than in later life. The nervous child is especially prone to develop metabolic derangements, such as acidosis, tetany, convulsions, urticaria, et cetera. The attacks of pallor, prostration, and vomiting, so common to the nervous child, may be due to temporary suprarenal insufficiency, thus causing glycopenia. Ketosis is a frequent occurrence, due to failure to maintain an adequate supply of carbohydrate, for complete fat metabolism. Lack of resistance to infection is usually observed, and even trivial infections become severe, due to the acidosis which generally accompanies them. Mucous colitis, and bronchial asthma may likewise be expressions of such metabolic disturbances.

It is suggested that a minimum of fat be included in the regular diet, and an increase in sugars and starches be provided. A small daily dose of alkali is also beneficial.

THOMAS MYERS, M.D.

OCCUPATIONAL THERAPY IN A TUBERCULOSIS SANATORIUM: C. Bush, M.D. (Occupational Therapy and Rehabilitation, 1929, VIII, 95). Occupational therapy from the standpoint of the treatment of tuberculosis in institutions is, according to the writer, a prime necessity. It is too often honored in the abuse rather than in the use, however. Occupational therapy may be termed the "digitalis" therapy of tuberculosis. It must be hedged about with therapeutic directions that are carefully carried out. If not, occupational therapy defeats its own purposes. The occupational therapy aide is apt to base her judgment and ideas on such non-essentials; and only too apt are the

patients to lose sight of the rôle such work plays in the attainment of their ultimate goal.

Occupational therapy serves two purposes that are fundamental in a tuberculosis sanatorium.

1. It acts as a mental diversion and therefore a nerve sedative and as such is an aid to prolonged rest treatment.

2. It serves as a test for the limit of energy expenditure to which each patient may go without harm to himself.

The occupational therapy department, as far as best administration is concerned, should not be confined in its activities. It should cover all types of work done by the patients while in the institution.

There is no doubt that in treating patients with tuberculosis in institutions it is always wise to begin thinking and planning for the patients' eventual rehabilitation in industry and home life at the time of their discharge. Thus study courses in English, accounting, typewriting, arithmetic, et cetera, are all of benefit, and can again, as far as the sanatorium is concerned, be considered occupational work. The obtaining of occupational therapy aides capable of carrying on this varied type of work is the most serious problem.

Wherever possible the patients should receive some remuneration for their work, as a psychological incentive. If their products are salable, they should have a percentage of their sales. Very careful book-keeping should be done. We, however, have not arrived at the happy day when occupational expense can be considered part of the medical treatment. The treatment of tuberculosis has been recently divided into three stages for the sake of charity: (1) the stage of absolute rest; (2) the stage of supervised rest and exercise, and (3) the stage of rehabilitation, supervised work.

In the first of these stages rest must needs be rigidly enforced, nevertheless occupational therapy enters into this stage in certain cases. Where light hand work for a few minutes twice a day soothes the patient it should be used. Where brief study periods or writing periods occupy the mind they are beneficial. Occupational work should never be used in this period, however, without a definite medical indication for it.

In the second stage lies the great field for occupational therapy. This should be used with light work first, gradually beginning a half hour a day and working up hour by hour as the patient shows ability to go on. It is here that the tendency to overwork the patient comes in. The patient usually feels well enough to do more than his condition warrants and is himself the great offender. Time must be strictly limited by the physician and the occupational aide must see that the time is strictly followed. No patients should be forced to do any particular kind of work. Making any type of occupational work compulsory naturally arouses antagonisms, but the patients are given to understand that they must do some kind of work to test their limit of energy expenditure, and that they may choose that

which they like to do. This freedom of choice creates interest.

A. T. LAIRD, M.D.

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**THE TREATMENT OF TINEA OF THE SCALP WITH THALLIUM SALTS:** V. Pardo-Castello et al. (*Archives of Dermatology and Syphilology*, March, 1929, Vol. 19, No. 3, Page 409). The oral administration of thallium acetate in doses of 7 to 8 mg. per kilo of body weight produced complete alopecia of the scalp within twenty-one days. The hair regrows in from twenty-two to forty-nine days after taking the thallium. If the loosened dead hairs are thoroughly removed, the new hairs are usually free from infection.

Hair in the eyebrows and other parts is not affected by thallium. The treatment cannot be administered after the age of fourteen, as toxic symptoms are produced, such as diarrhea, pains in the legs, pallor. Similar transitory symptoms may occasionally occur in younger children as well, without interfering with the treatment.

It is believed that the fall of hair caused by the administration of thallium is due to temporary dysfunction of the thyroid gland. Endocrine changes make the treatment inadvisable after puberty begins.

The treatment compares favorably with epilation as produced by  $\alpha$ -rays, but must be used cautiously, as thallium is a toxic drug; for this reason the  $\alpha$ -ray, properly used, is the method of choice.

THOMAS MYERS, M.D.

## SURGERY

### SUPERVISORS:

DONALD K. BACON,  
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,  
MAYO CLINIC, ROCHESTER

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**CONGENITAL VALVULAR OBSTRUCTION OF THE PROSTATIC URETHRA:** Hugh H. Young and Robert W. McKay (*Surg., Gynec. and Obst.*, Apr., 1929, Vol. XLVIII, No. 4, 509-535). The authors report twenty-one cases of congenital valve of the posterior urethra which have been seen at the Brady Urological Institute. Fifteen of these patients have been operated upon successfully.

The following things are stressed: the importance of a complete urological examination and a careful history; the search for a dilated bladder, ureters and kidney pelvis; the necessity of blood chemistry, if valvular obstruction and renal impairment are suspected; delicate instrumentation to detect the valvular obstruction; careful efforts to find the aperture between the valves by

means of pointed ureteral catheters in order to drain the bladder; the necessity of gradual decompression to avoid shock, uremia, et cetera; the use of the cystoscope or urethroscope and cystogram to demonstrate the valvular obstruction; the dilated prostatic urethra above it; the dilatation of the bladder, ureters and kidney pelvis into which the fluid usually flows by reflux; the necessity of careful preliminary treatment before operation is undertaken; the great advantage of the punch operation, with minute instruments especially prepared to fit the caliber of the urethra.

JOHN R. HAND, M.D.

**PERINEPHRITIC ABSCESS:** A. H. Peacock, M.D., F.R.C.S., Seattle, Wash. (*Surg., Gynec. & Obstet.*, 757, June, 1929). The chief object of this paper is consideration of the question of diagnosis. The classification of perinephritic abscesses used by Hunt (1924) is best suited.

1. Renal
2. Extrarenal.

The etiology of abscess of renal origin is more easily comprehended as we generally have demonstrable infection of the urinary tract. This type forms beneath the renal capsule posteriorly, rarely anteriorly.

Perinephritic abscess of extrarenal origin seldom shows pathology of the urinary tract. Urine, smears, cultures are negative and there are no renal symptoms. Often in these cases it is possible to get a history of furunculosis the preceding two or six weeks. *Staphylococcus aureus* is the usual type of bacteria cultured from the pus; the infecting agent being borne via the blood or lymph stream.

The age of incidence widely varies, but males are more frequently affected than females, due to cutaneous infection from trauma.

The main points of diagnosis in perinephritic abscess are:

1. Constant fever, mild chills and sweating.
2. Severe pain localized in the costovertebral angle.
3. High leukocytosis—usually higher than one would expect for the degree of fever present. An average of around 20,000 is not uncommon.
4. Curvature and rigidity of the spine.
5. Stereoscopic roentgenogram showing displacement of the kidney and ureter anteriorly or laterally, due to a retrorenal or retroperitoneal mass.

CHARLES W. MAYO, M.D.

#### ERGOSTEROL AND CATHODE RAYS

It has been shown that the high voltage cathode rays developed by Coolidge also many transfer antirachitic potency to ergosterol and substances containing it. The experiments showed that this sterol exposed to cathode rays is not rendered as potent as when subjected to ultra-violet irradiation from a mercury vapor quartz lamp. These experiments indicate that the antirachitic properties produced by cathode rays are not due to exposure to ultra-violet radiation produced by the rays themselves. (*Jour. A. M. A.*, March 9, 1929, p. 810.)

## PEDIATRICS

### SUPERVISORS:

CHESTER A. STEWART,  
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,  
MANKATO CLINIC, MANKATO

**THE USE OF SCARLET FEVER ANTITOXIN:** N. T. Welford, M.D. (*Amer. Jour. of Dis. of Children*, March, 1929, Vol. 37, No. 3, Page 553). Only those patients who had been given antitoxin on or before the fourth day of the disease were considered as having been treated with serum. Each patient was classified clinically on admission as having a mild, a moderately severe or a severe case of scarlet fever. The severity was dependent on the degree of toxemia. In determining this factor, the appearance of the throat proved to be the most reliable index.

Patients with an early profuse purulent nasal discharge frequently showed a considerable degree of toxemia and were classified as having severe scarlet fever.

Approximately 60 per cent of the cases classified as severe showed some improvement following the use of scarlet fever antitoxin. In the mild and moderate types, definite improvement could not be determined following the use of antitoxin.

In this series of cases, apart from the severe cases, scarlet fever antitoxin seemed to play little, if any, role in lessening the number or the severity of the complications.

The scarlet fever antitoxin not uncommonly produced seroreactions, and in some instances produced symptoms of greater severity than the disease for which the antitoxin was used. Of 217 patients treated with serum, 60, or 27 per cent, developed urticarial rashes. Nineteen, or 9 per cent, showed severe generalized seroreactions.

Convalescent serum has given rather striking results in lessening the toxic manifestations and has proved somewhat more reliable than scarlet fever antitoxin.

The mortality rate based on severe cases only in the group that did not receive antitoxin was almost double that of the group in which scarlet fever antitoxin was used.

R. N. ANDREWS, M.D.

**THE SALTS OF MERCURY IN THE TREATMENT OF EDEMA IN CHILDREN:** W. L. Funkhouser, M.D. (*Arch. of Ped.*, Vol. XLVI, No. 3, March, 1929). The control of edema has always been difficult, both in adults and children.

Novasurol is sodium oxymercuri-o-chlorophen-oxyl-

acetate with diethylbarbituric, a non-ionizable salt containing 33.9 per cent mercury, and is used in 10 per cent neutral sterile solution.

Keith and Whalen found that novasurol injected into normal individuals caused an increased excretion of chlorids in the urine with both a relative and an absolute increase in the output of sodium. There was no change in the hydrogen ion concentration, in the excretion of potassium, phosphates, urea, ammonia, or total nitrogen. Blood and serum analysis showed no constant change in the concentration of hemoglobin, chlorid, sodium, potassium, calcium, or phosphates. The combining power of CO<sub>2</sub> was within normal limits.

After the injection of novasurol, Hassencamp reported an output of 11,500 c.c. of urine. The chlorids were found increased both in total quantity and concentration. There was no alteration in the total nitrogen excreted. His conclusion was that the fluid and salts were first transferred to the blood from the tissues and excreted by the kidneys and that the action of these mercury salts was therefore on the extrarenal tissues.

Crawford and McIntosh summarized their results after the administration of novasurol: a marked increase in chlorids, a slight fall in the chlorid content of the plasma, a transient fall in the blood protein concentration, and a slight reduction of the chlorids of the edema fluid.

It is of interest to note that beneficial results have been obtained without any bad after-effects or damage to the kidney.

The prolonged use of these salts may cause gingivitis, stomatitis, or colitis, a very natural sequela to the large or prolonged administration of any mercurial preparations.

The conditions for which these salts of mercury may be used are edema when associated with cardiac disease, cirrhosis of the liver, polyserositis, polycythemia, and Banti's disease. The contraindication would be any acute inflammatory process or structural damage to the kidneys, such as an acute edematous nephritis. The dose of novasurol and salyrgan is the same,  $\frac{1}{2}$  to 1 c.c.

It is not advisable to give the drug oftener than every fourth day.

#### AOLAN

Aolan is prepared from milk freed from fat, and is claimed to be a germ-free and toxin-free solution of lactalbumin. It consequently contains protein foreign to the human body and its injection on that account may be fraught with the danger of violent reactions, especially in so-called hypersensitive persons. The Council on Pharmacy and Chemistry has declared Aolan inadmissible to New and Non-official Remedies because it is marketed on unwarranted therapeutic claims. (Jour. A. M. A., May 25, 1929, p. 1783.)

#### BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

#### BOOKS RECEIVED FOR REVIEW

**THE PHYSIOLOGY OF LOVE.** George M. Katsinos, Ph.D., M.D. 326 pages. Cloth, \$4.00. Boston: Privately printed by the author, 1929.

**NEW AND NON-OFFICIAL REMEDIES,** 1929, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1929. Cloth. Price, postpaid, \$1.50. Pp. 488; xlviii. Chicago: American Medical Association.

This book offers a solution to the problem of the busy physician who is daily importuned by "detail" men to try the thousand and one new preparations brought out by enterprising manufacturers of pharmaceuticals. If the preparation in question is not described in New and Non-official Remedies, it is quite safe to refuse to try it, no matter how alluring the salesman's talk. The book contains descriptions of those new preparations which, after painstaking examination, the Council on Pharmacy and Chemistry has found worthy of recognition and of trial by the medical profession. It is revised each year to bring it up to date with the best medical thought and to include the new preparations that have been recognized during the year as well as to delete those which have been found not to live up to their promise of therapeutic value.

In this edition there appears for the first time an article on liver preparations and their therapeutic use. The articles on ergot, metallic peroxides, pituitary gland, and radium and radium salts have been considerably revised. Among the new preparations which have been included in this edition are: diphtheria toxoid, which is the toxin of diphtheria so modified by treatment with formaldehyde as greatly to reduce its toxicity yet preserving its antitoxic power; metrazol, another proposed substitute for camphor; liver extract No. 343 and concentrated liver extract-Armour, for the treatment of pernicious anemia. Other newly accepted articles are: bismuth sodium tartrate-Searle, another water soluble bismuth tartrate preparation; scarlet fever toxin-P. D. & Co., another scarlet fever toxin manufactured under lease of the Scarlet Fever Commission; parathyroid hormone-Squibb, standardized by the method of J. B. Collip, and paroiodin, made and standardized by the method of A. M. Hanson, both being solutions of the active principle or principles of parathyroid gland for appropriate clinical use. An important deletion is the omission of all generators charged with radium.

A new departure in this edition is a list of "ex-

empted" articles. This comprises some hundred and thirty medical and non-medical products examined by the Council and found to be of such composition and to be so marketed as not to require acceptance or rejection by the Council under its rules.

A section of the book (brought up to date each year) gives references to proprietary articles not included in New and Non-official Remedies. This list, in conjunction with the book proper, constitutes a cumulative index of proprietary medicine, which physicians may consult when a proprietary product is brought to their attention. Physicians cannot dispense with the use of the newer remedies that are brought out each year; they can neither judge them on the basis of the manufacturers' claims nor have they the time or means to determine their merits for themselves. For this reason, every physician should possess a copy of this volume, which annually puts at his disposal an authoritative, up to date, and unbiased estimate of these preparations.

**NORMAL DIET.** W. D. Sansum, M.D. Second Edition. 136 pages. \$1.50. St. Louis: C. V. Mosby Co. 1927.

This second edition of "The Normal Diet" embodies, as did the first edition, a brief outline of diet fundamentals and would be of greater interest probably to the patient than to the physician. The volume is very brief and concise and has a definite message for both.

L. R. CRITCHFIELD, M.D.

**DIABETIC MANUAL FOR PATIENTS.** Henry J. John, M.D. 202 pages. Illus. \$2.00 St. Louis: C. V. Mosby Co., 1928.

This small volume is suitable as a guide for the diabetic person or the one who prepares his food. There are brief chapters dealing with history, causes, and management of the condition. Detailed instructions regarding the use of insulin and very complete but simple dietary charts add to its value as a guide for the diabetic.

L. R. CRITCHFIELD, M.D.

**RECENT ADVANCES IN CHEMISTRY IN RELATION TO MEDICAL PRACTICE.** W. McKim Marriott, B.S., M.D. 141 pages. Illus. \$2.50. C. V. Mosby Co. 1928.

This series of lectures collected and published in book form should be of great value especially to the practitioner of medicine.

The author is fully conversant with biological chem-

istry and its relationship to medicine. Recent well defined advances in this field have aroused our interest anew to the importance of a thorough understanding of the chemical processes which make for proper functioning of the human body.

Dr. Marriott's little book is concise, clear, and definite, serving to broaden our knowledge as well as stimulate our interest anew in the fascinating field of body chemistry.

L. R. CRITCHFIELD, M.D.

**TEXT-BOOK OF UROLOGY, For Students and Practitioners.** Daniel N. Eisendrath, M.D., Attending Urologist Michael Reese and Chicago Memorial Hospitals; Assistant Professor of Surgery (Genito-Urinary), Rush Medical College of the University of Chicago; and Harry C. Rolnick, M.D., Associate Urologist Mt. Sinai Hospital; Adjunct Urologist Michael Reese Hospital; Formerly Associate in Genito-Urinary Surgery, Northwestern University Medical School. 942 pages. 711 illustrations, 11 in colors. Price \$9.00. Philadelphia and London: J. B. Lippincott Company, 1928.

This volume aims to present, for the general practitioner and medical student, the entire field of urology including the male genitalia, in the simplest possible manner, and still without the omission of any subjects coming within this field. By utilization of methods used by the authors in their teaching, an unusual and interesting volume has been produced. There is a free use of large heavy type through the entire volume for the purpose of emphasis. This helps in the use of the book as a reference work, but makes it a little harder to read. The unusually large number of illustrations is a great advantage. These include diagrams, sketches, photographs and roentgenograms. No previous knowledge is taken for granted; almost everything is illustrated from the simplest instruments and apparatuses to the steps of the most complicated operations. The greater emphasis, however, is laid on the procedures which may be carried out by general practitioners. The 912 pages of text are divided into 7 sections and 59 chapters. The index covers about 30 pages of small type, adding to the value as a reference book.

This work is certainly different from the usual textbook of urology. It seems to the reviewer that it fulfills its aim better than other texts he has seen.

THEODORE H. SWEETSER, M.D.

# REPORT MINNESOTA STATE BOARD OF MEDICAL EXAMINERS, APRIL, 1929

## BY EXAMINATION

NAME	SCHOOL AND DATE OF GRADUATION	ADDRESS
Alexander, Harlan Alfred.....	U. of Minn., M.B., 1929.....	New Asbury Hospital, Minneapolis.
Bascom, Kellogg Finley.....	U. of Minn., M.B. and M.D., 1929.....	28th and Toledo Ave., St. Louis Park, Minn.
Bendix, Lester H.....	U. of Minn. M.B., 1928.....	General Hospital, Minneapolis.
Boardman, Dalmon Virgil.....	U. of Minn., M.D., 1929.....	University Hospital, Minneapolis.
Bray, Philip Noyes.....	U. of Minn., M.B., 1929.....	General Hospital, Minneapolis.
Brusegard, James Frederick.....	U. of Colorado, M.D., 1928.....	General Hospital, Minneapolis.
Burke, Richard Michael.....	U. of Minn., M.B., 1928.....	Glen Lake Sanitarium, Oak Terrace, Minn.
Chernack, Morris J.....	U. of Minn., M.B., 1929.....	322 13th Ave S.E., Minneapolis.
Clark, Howard Elton.....	U. of Minn., M.B., 1928.....	Swedish Hospital, Minneapolis.
Colp, Edward Adams.....	Tufts, M.D., 1928.....	St. John's Hospital, St. Paul.
Ederer, John Joseph.....	U. of Minn., M.B., 1929.....	Oak Terrace, Minn.
Farrell, Hubert James.....	Marquette, M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Fetterly, Warren.....	U. of Minn., M.B., 1929.....	2740 Cedar Ave. S., Minneapolis
Fischer, Viola Ingeborg.....	U. of Minn., M.B., 1928.....	General Hospital, Minneapolis.
Fogelberg, Emil J.....	U. of Minn., M.B., 1929.....	Midway Hospital, St. Paul.
Gallagher, Henry Fry.....	U. of Minn., M.B., 1928.....	General Hospital, Minneapolis.
Guldseth, Gustav J. S.....	U. of Minn., M.B., 1928; M.D., 1929.....	3445 17th Ave. S., Minneapolis.
Hallock, Philip.....	U. of Minn., M.B., 1928.....	General Hospital, Minneapolis.
Hanson, Edwin Carlton.....	U. of Minn., M.B., 1929.....	Fairview Hospital, Minneapolis.
Hardeman, Daniel Robert, Jr.....	U. of Arkansas, M.D., 1927.....	Mayo Clinic, Rochester, Minn.
Hedberg, G. Arvid.....	U. of Minn., M.B., 1929.....	St. Mary's Hospital, Duluth, Minn.
Hillyard, Lorin V.....	U. of Calif., M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Hooper, Philip G. E.....	U. of Minn., M.B., 1929.....	Swedish Hospital, Minneapolis.
Hunt, Arthur Bishop.....	U. of Minn., M.B., 1929.....	329 Union St. S.E., Minneapolis.
Johnson, Harry Alvin.....	U. of Minn., M.B., 1928.....	Swedish Hospital, Minneapolis.
Learmonth, James R.....	Glasgow Univ., M.B., 1921.....	Mayo Clinic, Rochester, Minn.
McIver, Bert A.....	U. of Minn., M.B., 1928; M.D., 1929.....	Lowry, Minnesota.
Maly, Henry Wendell.....	Creighton, M.D., 1925.....	Glen Lake Sanitarium, Oak Terrace, Minn.
Mason, James Bryant.....	U. of Pa., M.D., 1925.....	Mayo Clinic, Rochester, Minn.
Montgomery, Jimmie Ethel.....	U. of Minn., M.B., 1928.....	Bethesda Hospital, St. Paul.
Moore, Claude.....	U. of Va., M.D., 1916.....	Mayo Clinic, Rochester, Minn.
Nabers, Luke Waldrep.....	U. of Cincinnati, M.D., 1924.....	Mayo Clinic, Rochester, Minn.
Nelson, Oscar Leroy.....	U. of Minn., M.B., 1928.....	1318 Monroe St. N.E., Minneapolis
Olsen, Edward George.....	U. of Minn., M.B., 1928; M.D., 1929.....	3106 Pierce St. N.E., Minneapolis.
Oppen, E. Gerhard.....	U. of Minn., M.B., 1929.....	Fairview Hospital, Minneapolis.
Palomeque, Emilio Jose.....	U. of Pa., M.D., 1923.....	Mayo Clinic, Rochester, Minn.
Platt, Frank Bertram.....	U. of Edinburgh, M.B., 1928.....	945 Lincoln Ave., St. Paul.
Schaefer, Joseph Francis.....	St. Louis Univ., M.D., 1925.....	Mayo Clinic, Rochester, Minn.
Scott, Douglas Edmund.....	U. of Toronto, M.B., 1924.....	Mayo Clinic, Rochester, Minn.
Shong, Geneva Loretta.....	U. of Minn., M.B., 1928.....	15 E. Victoria St., Duluth, Minn.
Walker, Maurice Andrew.....	Rush, M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Wolff, Herman Julius.....	U. of Minn., M.B., 1929.....	University Hospital, Minneapolis.

## BY RECIPROCITY

Ball, Ralph G.....	U. of Kansas., M.D., 1927.....	Mayo Clinic, Rochester, Minn.
	School of Medicine	
Bradley, John Warwick, Jr.....	U. of Iowa, M.D., 1927.....	855 1st St. S.W., Rochester, Minn.
Copeland, Murray Marcus.....	Johns Hopkins, M.D., 1927.....	Mayo Clinic, Rochester, Minn.
Hookey, John Arlington.....	U. of Mich., M.D., 1924.....	117 6th Ave S.W., Rochester, Minn.
Huffington, Herbert L.....	Northwestern, M.D., 1920.....	Earl Clinic, Lowry Medical Arts Building, St. Paul.
Kirklin, Byrl Raymond.....	Ind. Univ., M.D., 1914.....	Mayo Clinic, Rochester, Minn.
Kreuzer, Titus Charles.....	Marquette, M.D., 1927.....	New Richland, Minn.
Love, J. Grafton.....	U. of Pa., M.D., 1927.....	Mayo Clinic, Rochester, Minn.
McLane, William Otrey.....	Rush, M.D., 1928.....	22 Oak St., Minneapolis.
Mayo, Joseph Graham.....	U. of Ia., M.D., 1927.....	Mayo Clinic, Rochester, Minn.

## NATIONAL BOARD CREDENTIALS

Bartels, Elmer Clarence.....	U. of Ill., M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Childrey, John Howard.....	Med. Coll. of Va., M.D., 1926.....	Mayo Clinic, Rochester, Minn.
Gray, Howard Kramer.....	Harvard, M.D., 1927.....	825 5th Ave. S.E., Rochester, Minn.
Pfunder, Malcolm C.....	Rush, M.D., 1920.....	Miles City, Mont.
Priestley, James T.....	U. of Pa., M.D., 1926.....	Mayo Clinic, Rochester, Minn.
Wilbur, Dwight Locke.....	U. of Pa., M.D., 1926.....	Beverly Apts., Rochester, Minn.

**WANTED**—Salaried appointments for Class A Physicians in all branches of the medical profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan Ave., Chicago. Established 1896. Member The Chicago Association of Commerce.

**BETHANY HOSPITAL**, 3701 Bryant Avenue South, Minneapolis, is equipped to care for limited number of maternity cases at a nominal fee. New building. Light, airy rooms. Good food. Call Colfax 0016 or in person at above address.

**WANTED**—Young doctor to locate in established office, share reception room with dentist. Dentist has large practice. Fine opportunity for an up and going doctor. Write C. C. Gerber, Arcade and Case Streets, Saint Paul, Minn., or call Tower 7340.

**FOR SALE**—On account of poor health will sell my entire office equipment, all kinds of instruments, appliances, x-ray, electrotherapeutic outfits, microscopes, scales, etc. For further particulars, address D-25, care MINNESOTA MEDICINE.

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**MEDICAL TECHNICIAN** desires position in Twin Cities. Four years' experience. Also X-Ray, Basal Metabolism and Medical Stenography. Address D-24, care MINNESOTA MEDICINE.

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**REGISTERED NURSE AND SECRETARY** desires position in doctor's office. Have some knowledge of laboratory routine. Capable of assuming responsibility. Write Agnes M. Peterson, R. N., 1520 Park Avenue, Minneapolis. Telephone Atlantic 1021.

**WANTED**—Young physician, graduate of Class A school to assist an established physician, town of 3,000; hospital facilities and large rural practice. Catholic preferred. Start on salary with partnership in view if services are satisfactory. Excellent opportunity for the right man. Address D-28, care MINNESOTA MEDICINE.

**FOR RENT**—Desirable space in Physicians and Surgeons Building, Minneapolis. Group of 4 doctors and 1 dentist. Address D-29, care MINNESOTA MEDICINE.

**CATHOLIC PHYSICIAN**, 22 years in same location, desires to hear from surgeon or any special line with future. Address D-27, care MINNESOTA MEDICINE.